APPENDIX C11

Stormwater Management

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STORMWATER MANAGEMENT REPORT

KIRBY ROAD EXTENSION
MUNICIPAL CLASS ENVIRONMENTAL ASSESSMENT

CITY OF VAUGHAN

Project: 2015-4339 **August 2019**

Revision	Description	Prepared		Approved	
		By	Date	By	Date
2.	SWM Report	Y. Gollamudi	August 2019	K. Shahbikian	August 2019
1.	Final Draft SWM Report	Y. Gollamudi	May 2019	K. Shahbikian	May 2019
0.	Draft SWM Report	Y. Gollamudi	December 2018	K. Shahbikian	December 2018

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TABLE OF CONTENTS

TABLE OF FIGURES

LIST OF APPENDICES

1.0 INTRODUCTION

1.1 Objective and Location

This Stormwater Management (SWM) report has been prepared in support of the proposed Kirby Road Extension between Dufferin Street and Bathurst Street in the City of Vaughan. The subject site is located immediately west of Town of Richmond Hill municipal border. The Subject area is bound by agricultural lands, woodlots to the north and concrete recycling facility, woodlots, agricultural lands to the south. A site location plan is provided on **Figure 1.1**

An Environmental Study Report is being prepared by Schaeffers Consulting Engineering as part of Phase 4 of Municipal Class EA Process. The report recommends road alignment option 5A and cross section option 1 for the proposed Kirby Road Extension as presented on **Figure 1.2** for reference. The objective of this report is to provide stormwater servicing brief for the proposed Kirby road extension based on the recommended road alignment option 5A and cross section option 1.

Yashaswy Gollamudi

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KIRBY ROAD EXTENTION
MUNICIPAL CLASS
ENVIRONMENTAL ASSESSMENT

LEGEND

- EA STUDY AREA
- SUBJECT LOCATION
- CITY BOUNDARY LINE

DUFFERIN STREET

BATHURST STREET

CITY OF VAUGHAN

TOWN OF RICHMOND HILL

Hearthside Rd

Tower Hill Rd

Amstel Ave

Valmont Ave

Gamble Rd

Aikenhead Ave

Waymount Ave

Eagle Peak Dr

Rocksprings Ave

Salt Creek Ave

Owl Ridge Dr

Cedar Springs

Shaftsbury Ave

Springer Dr

Kootenay Ridge

Athabasca Dr

Baker Crescent

Hunterwood Chase

Woodland Acres

Rebecca Cr

Collis Ct

Alpaca Dr

Gannell Dr

Koka Tee Ct

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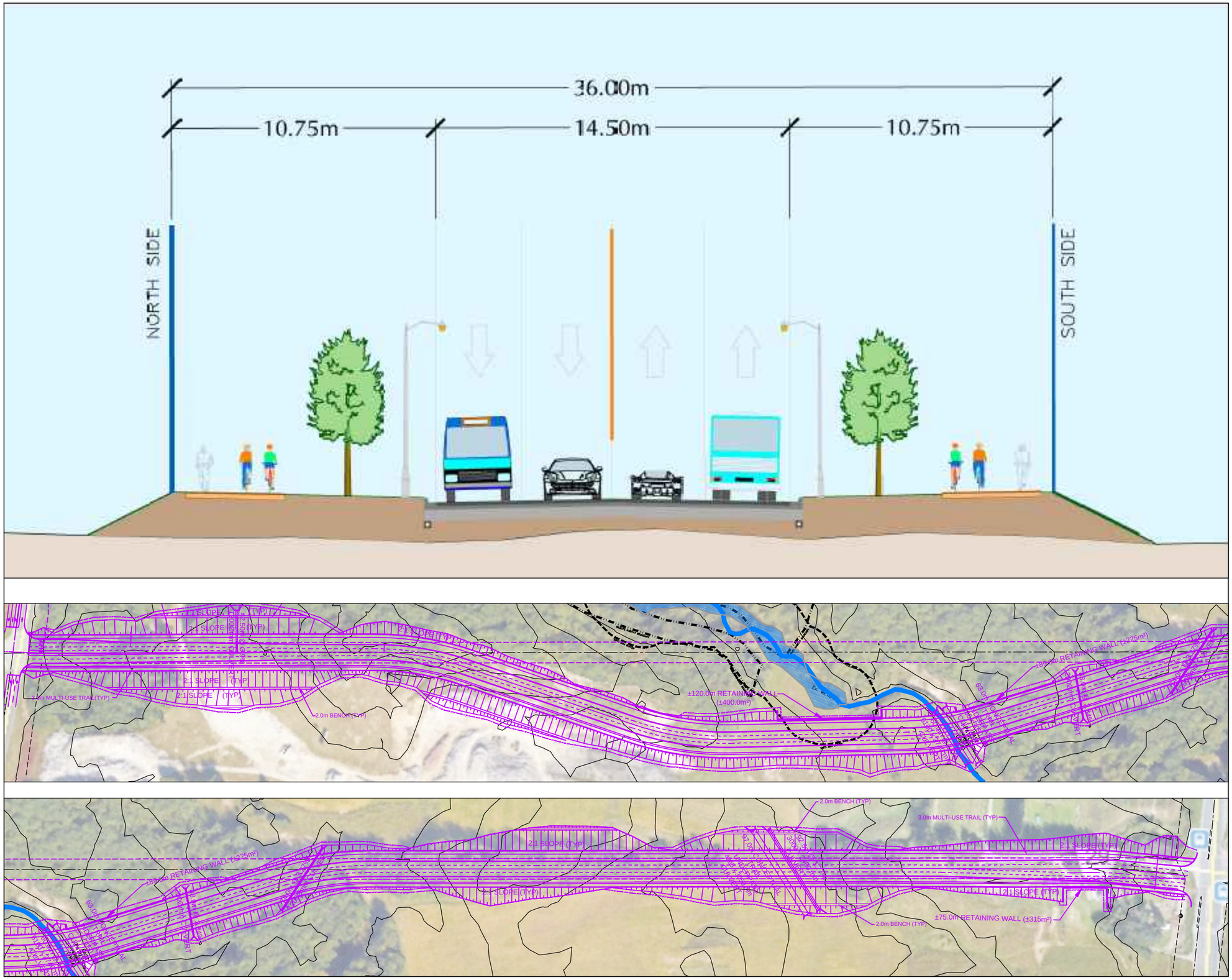
FIGURE 1.1
KIRBY ROAD EXTENSION
LOCATION PLAN

2015-4339	AUGUST 2019	SCALE: N.T.S.

KIRBY ROAD EXTENTION
MUNICIPAL CLASS
ENVIRONMENTAL ASSESSMENT



LEGEND

ALIGNMENT 5A

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FIGURE 1.2
RECOMMENDED ROAD ALIGNMENT '5A'
AND CROSS SECTION '1'

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1.2 Background

The followings documents were reviewed in preparation of the report:

- *Stormwater Management Criteria*, Toronto and Region Conservation Authority, August 2012.
- *Low Impact Development Stormwater Management Planning and Design Guide*, Credit Valley Conservation and Toronto and Region Conservation Authority, 2010.
- *Engineering Design Criteria & Standard Drawings*, City of Vaughan, 2013.
- *Draft Revised Hydrogeologic Study Kirby Road Extension, City of Vaughan, Ontario,* prepared by Terraprobe Inc.
- *Preliminary Geotechnical Investigation Class Environmental Assessment (EA) Study, Kirby Road Extension, Dufferin Street to Bathurst Street, City of Vaughan, Ontario*, prepared by Terraprobe Inc.
- *Kirby Road Extension Municipal Class Environmental Assessment, Final Environmental Study Report*, prepared by Schaeffers Consulting Engineers dated August 2019

2.0 STORMWATER MANAGEMENT

2.1 Existing Conditions

The site is located within the East Don River Watershed. Based on the available topographic mapping (aerial and survey), the site generally slopes in the southerly direction. A small portion of the proposed Kirby Road extension under existing conditions flows towards Bathurst Street. The existing topography and drainage conditions are presented in **Figure 2.1.**

The site is traversed by a number of intermittent swales. A Provincially Significant Wetland (PSW) is located north of the proposed the subject site as presented on **Figure 2.1**. Approximately 55.3ha is draining under existing conditions to the PSW. There is one major valley and a watercourse traversing the existing municipal road allowance. The flow in the watercourse is intermittent and was found to be dry at the time of a site visit conducted by Terraprobe on September 05, 2017.

The external area flowing towards the subject site was delineated based on the aerial topography and is presented in **Figure 4.1**. There is an existing manmade berm by the Trans Canada Pipeline south of the proposed Kirby Road Extension which prevents the natural flow from the subject site and the external area. Due to the permeable soil conditions on the site (mostly sand and silt), most of the flow on the site is infiltrated before spilling.

A Hydrogeologic Study and Geotechnical Report was prepared by Terraprobe as part of the Class EA Study and is presented in **Appendix A** CD. According to the reports, the predominant soil type on the study area is Sand/Sandy-Silt to Silty Sand.

Yashaswy Gollamudi

DUFFERIN ST

BATHURST ST

KIRBY ROAD EXTENTION
MUNICIPAL CLASS
ENVIRONMENTAL ASSESSMENT

LEGEND

- EA STUDY AREA
- SUBJECT SITE
- EXISTING WETLAND
- EXISTING WATERCOURSE
- EXISTING DRAINAGE BOUNDARIES
- AREA DRAINING TO PSW
  AREA = 55.32ha
- DIRECTION OF EXISTIING FLOW

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FIGURE 2.1
PRE-DEVELOPMENT
DRAINAGE CONDITIONS

2015-4339	AUGUST 2019	SCALE: N.T.S.

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3.0 DESIGN CRITERIA

Stormwater Management Design Criteria for the subject site follows Ministry of the Environment and Climate Change (MOECC) Stormwater Management Planning and Design Manual dated 2003 (hereon referred to as the MOECC SWM Manual) for water quality, water quantity and erosion control. Additional Design Criteria from City of Vaughan are incorporated into the design of this proposed development as discussed below.

1. Storm sewers shall be designed to convey at least 5-year return frequency storm without any surcharging during any storm return frequency event;
2. Minimum pipe diameter for storm sewers is 200mmØ;
3. Minimum time of concentration of 7 minutes;
4. Minimum velocity shall be 0.75m/s at actual flow;
5. Maximum velocity shall be 5.0m/s with pipe flowing full
6. **Quantity Control** – Since each catchment area is less than 5ha the post-development release rates should be controlled to pre-development flow rates based on the TRCA Design Criteria.
7. **Quality Control** - Enhanced stormwater quality must be provided for the site (removal of 80% of TSS) (MOECC SWM Manual)
8. **Erosion Control** - 5mm runoff retention on site to meet erosion control;
9. **Water Balance** – The subject site is located in the WHPA-Q1 and Q-2 region. It is to be noted that majority of the site is located on significant groundwater recharge area. The post-development infiltration must meet pre-development volumes.
10. **PSW** – The subject is located close to a provincially significant wetland. The base flows to the PSW should be maintained in the post-development conditions.

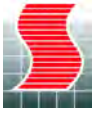
4.0 PROPOSED STORMWATER MANAGEMENT PLAN

The site is proposed to generally follow the existing drainage pattern shown on **Figure 2.1**.

Based on the recommended Alignment 5A and the proposed grading, the post-development drainage areas were delineated and are presented in **Figure 4.1**. The proposed road alignment 5A avoids crossing the PSW compared to the previously recommended road alignment 5. A culvert is proposed to convey the flows from the PSW across the proposed ROW. More details about the culvert crossing is presented in Section 4.1.

Since the road alignment avoids crossing the PSW, majority of the area draining to the PSW is maintained in the post-development drainage conditions. As shown on **Figure 4.1**, approximately 55.38ha (from 57.77ha of Catchment 302E) of the drainage area drains to the PSW in post development conditions, therefore the base flow to the PSW is maintained. The drainage areas for proposed ROW were delineated and are presented in the figure as Catchment 201-206. The areas were delineated to mimic the existing drainage pattern and are based on the proposed road grading. The quantity and quality control for the catchments are proposed to be provided using treatment train approach. Please refer to **Section 4.4** for more details.

According to an order dated February 3,2015 issued by the Minister of Municipal Affairs and Housing under the Oak Ridges Moraine Conservation Act (2001), the lands south east of the proposed Kirby Road Alignment are proposed to be developed as urban areas. Therefore, the external area (Catchment 301E) coming from the north to the proposed subdivision is proposed to be diverted towards the existing watercourse. The effect of diverting this flow to the water course was studied and is presented in **Section 5.0**. The remaining flow from the external areas draining from the north is proposed to conveyed to the south via proposed culverts (Refer to **Section 4.1** for more details).



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DUFFERIN ST

301E
7.42ha

302E
57.77ha

303E
11.88ha

304E
13.93ha

305E
72.56ha

306E
30.36ha

OPTION 1

OPTION 2

201
3.47ha

202
0.54ha

203
0.61ha

204
1.14ha

205
1.62ha

206
1.63ha

307E
24.25ha

BATHURST ST

KIRBY ROAD EXTENTION
MUNICIPAL CLASS
ENVIRONMENTAL ASSESSMENT

LEGEND

- EA STUDY AREA
- SUBJECT SITE
- EXISTING WETLAND
- EXISTING WATERCOURSE
- PROPOSED DRAINAGE BOUNDARIES
- AREA DRAINING TO PSW
  AREA = 55.38ha
- PROPOSED DRAINAGE AREA
  ALONG PROPOSED KIRBY ROAD
- 306E / 30.36ha — DRAINAGE AREA ID
  DRAINAGE AREA IN HECTARES
- PROPOSED CULVERT
- PROPOSED BYPASS SEWER
  (OPTION1)
- PRELIMINARY OUTLET LOCATION

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FIGURE 4.1
POST-DEVELOPMENT
DRAINAGE CONDITIONS

2015-4339	AUGUST 2019	SCALE: N.T.S.

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4.1 External Drainage Area

External drainage to the subject site under pre-development conditions is presented on **Figure 2.1**. Under post-development conditions, the external area is proposed to be conveyed to the south via proposed culverts. The culvert sizing calculations are presented in **Appendix B**.

As mentioned in **Section 4.0**, the external catchment, 301E, is proposed to be piped and the flow is proposed to be conveyed to the existing watercourse as presented on **Figure 4.2**. The flow is proposed to be diverted either through the proposed Kirby road (Option 1) or through the proposed subdivision on the south (Option 2). Both the proposed options will be studied in detail during the detail design stage.

By directing runoff to the creek, the proposed superpipe by-pass has to be sized to accommodate the external drainage area (Catchment 301E). The proposed vertical profile of road at this reach of the road dictates a relatively deep storm sewer, which raises constructability and operation and maintenance concerns. Lowering of the road profile may address the concerns and should be further investigated.

Using the cross culvert at this location allows to maintain the existing condition runoff drainage pattern. However, it would require a downstream conveyance solution to be developed through the design of future residential subdivision, involving a large pipe extending along the local roads for a longer distance. It is recommended that both of the options for flow conveyance from Catchment 301E should be further studied during engineering and detail design stage of the project.

The effect of piping and diverting the flow was studied in the Function Servicing Report, Rizmi Subdivision dated August 2019 prepared by Schaeffers Consulting Engineers. A continuous model with 40 years of rain data was prepared for downstream analysis. As per the results presented in the FSR, there is no impact on diverting the flows, as majority of the flow is infiltrated on site near the man-made berm. Th floodplain analysis was also completed based on the diverting the flows and is discussed in **Section 5.0.**

The culverts were previously sized to safely convey the Regional flow calculated using the Visual OTTHYMO model. The regional flows were calculated based on the soil information from the

York County Soil Map. However, as per the latest Don River PCSWMM model received from the TRCA, the 100-year flows corresponding to each catchment were higher. The culverts were rechecked with the higher 100-year flow values.

As per the culvert sizing completed using Culvert master, the required culvert sizes to safely convey the flows were smaller compared to the proposed culvert sizing. The culvert sizes were upsized as per the recommendations of the natural heritage consultant. According to Savanta, the natural heritage consultant, the proposed culvert sizes should be greater than 1m high to allow movement of small to medium wildlife. For large wildlife, the required height and width is approximately 3m.

The culvert sizes are summarized in **Table 4.1**. The flow calculations and Culvert Sizing reports are presented in **Appendix B** for reference.

Table 4.1: Proposed Culverts Sizing Summary

Catchment	Area (ha)	Proposed Culvert Size(mm)
301E	7.42	1200
302E	57.77	6100 x 2740
303E	11.88	1200
304E	13.93	1200
305E	72.56	3000 x 2400

Please note that the flows were calculated by prorating the larger sub catchment area flow using the MTO Pro-rating Methodology. The detailed calculations are provided in **Appendix B**.

4.2 Allowable Release Rates

Since each catchment area is less than 5 ha, the allowable release rates for each of the post development catchments were calculated based on the pre-development catchments presented on **Figure 4.3**. Visual OTTHYMO (VO) modelling was completed based on the catchment parameter data presented in **Appendix C**. The Don River 12hr SCS storms obtained from the TRCA were modelled. The 100 yr allowable release rates for the post-development catchments can be found in **Table 4.2**. More details are provided in **Appendix C**.

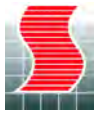

Table 4.2: Allowable Release Rates

S	100	101	102	103	104	105	106
2-YR	10 L/s	40 L/s	5 L/s	5 L/s	9 L/s	31 L/s	17 L/s
5-YR	19 L/s	67 L/s	9 L/s	10 L/s	16 L/s	57 L/s	30 L/s
10-YR	27 L/s	89 L/s	12 L/s	14 L/s	23 L/s	78 L/s	41 L/s
25-YR	37 L/s	119 L/s	17 L/s	19 L/s	32 L/s	107 L/s	56 L/s
50-YR	46 L/s	142 L/s	21 L/s	24 L/s	39 L/s	130 L/s	68 L/s
100-YR	56 L/s	169 L/s	26 L/s	29 L/s	47 L/s	156 L/s	82 L/s

4.3 Water Quantity Control

According to the TRCA design criteria, the post-development release rates should be controlled to pre-development flow rates. However, since it is not feasible to control each storm to its pre-development rates without using multiple orifice controls, it is proposed to control the post-development flows to pre-development 5-year release rates. The post-development rates are presented in **Table 4.3** below. As shown, the post-development release rates are less than the pre-development release rates for the 2-100-year design storms. Please note catchment 201 was sized based on the allowable release rates calculated for catchment 101.

Table 4.3: Post-development release rates

Post-development Release Rates (m3)						
Catchment	201	202	203	204	205	206
2-YR	28 L/s	4 L/s	4 L/s	6 L/s	23 L/s	12 L/s
5-YR	38 L/s	5 L/s	5 L/s	9 L/s	32 L/s	16 L/s
10-YR	45 L/s	6 L/s	6 L/s	10 L/s	38 L/s	20 L/s
25-YR	54 L/s	7 L/s	8 L/s	13 L/s	45 L/s	24 L/s
50-YR	60 L/s	8 L/s	9 L/s	14 L/s	51 L/s	27 L/s
100-YR	67 L/s	9 L/s	10 L/s	16 L/s	57 L/s	30 L/s

The required 100-year storage volumes are presented in **Table 4.4**. Preliminary sizing of the super-pipe is also shown in the **Table 4.4** for review.

Please note that Catchment 202, 203 and 204 are relatively small compared to the other catchments. The delineation ensures avoiding the crossings with the proposed culverts. During detailed design, the catchments can further be refined or combined.

Since the calculated Allowable Release Rates are small for some catchments, it is proposed that

during the detailed design stage the allowable release rates be estimated based on the practical orifice tube size (e.g. 100mm). The effect of increasing the release rate based on the minimum orifice size is expected to be minimum. If required the effect of deviation can be studies during the detailed design stage. According to a preliminary sizing of orifice controls, orifice tube of sizes 100mm – 150mm with a head of 1.8m to 2.1m can satisfy the flow control requirements.

Table 4.4: Post-development storage requirements

Catchment	Area	Required Storage (m3)	Approximate Length of the proposed sewer (m)	Super - pipe size (m)*	Provided Volume (m3)*
201	3.47	1700	850	1.8	2163
202	0.54	260	120	1.8	305
203	0.61	288	130	1.8	331
204	1.14	560	250	1.8	636
205	1.62	650	270	1.8	687
206	1.63	710	210	2.1	727

*Preliminary Calculations

The estimated pipe sizes shown in **Table 4.4** are theoretical calculations. The sizing of the proposed superpipes will be completed during the detail design stage. Moreover, due to the grade changes along the alignment, superpipe pipes may be staged with orifices to control the flow.

In the Plan and Profile drawing presented in **Appendix E**, equivalent box culverts are proposed.

Yashaswy Gollamudi

KIRBY ROAD EXTENTION
MUNICIPAL CLASS
ENVIRONMENTAL ASSESSMENT

DUFFERIN ST

BATHURST ST

100
1.17ha

101
2.30ha

102
0.54ha

103
0.61ha

104
0.99ha

105
2.32ha

106
1.08ha

LEGEND

- EA STUDY AREA
- SUBJECT SITE LOCATION
- EXISTING WETLAND
- EXISTING WATERCOURSE
- PROPOSED CATCHMENT AREAS FOR CALCULATING ALLOWABLE RELEASE RATES

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FIGURE 4.2
ALLOWABLE RELEASE RATES

2015-4339	AUGUST 2019	SCALE: N.T.S.

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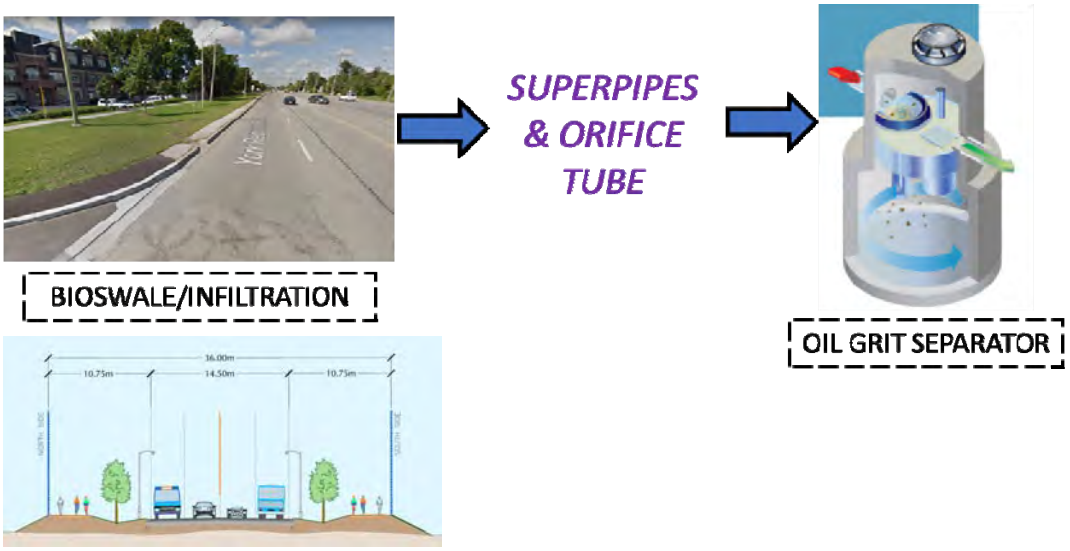
4.4 Water Quality Control

The development of an effective stormwater management plan requires the combination of various best management and low impact development technologies to create a comprehensive strategy for water quality and water quantity control. The sandy conditions of the soil along with low groundwater levels help in enabling infiltration within the site. The infiltration rate on site will be confirmed during detailed design stage.

To provide the best treatment train approach for the proposed Kirby Road, various conveyance controls and end of pipe solutions were examined and are presented below. The treatment train options were revised based on the input from the TRCA / City of Vaughan on the initial submission. The Engineering drawings presented in **Appendix E** were prepared based on Option 3.

Option 1: Bioswale/Infiltration-> Superpipes -> Oil and Grit Separator (OGS)



The quality control for the Road ROW in Option 1 can be achieved through the use of bioswales and an Oil Grit Separator (OGS). The runoff from the road ROW is proposed to be directed

towards the bioswales installed along the boulevards via curb cuts where infiltration is proposed. The overflow from the bioswale will be then directed towards the proposed storm sewer system and eventually to the OGS. The bioswales will be sized to provide the greater of the water balance requirements and quality control (60% TSS removal). Before releasing into the OGS, the flow is proposed to be controlled with the help of an orifice control structure. The OGS will provide the additional 50% TSS removal required to meet the quality control requirements.

Bioswales are a common practice utilized within the public ROW by many municipalities to achieve the required quality control volume. The proposed 36m ROW will feature roadside bioretention swales on either side of the road.

The swales will consist of two components, the upper filtration layer, consisting of low maintenance vegetation materials planted into a 0.5m thick sand layer followed by 0.1m of pea gravel, and finally the clear stone (gravel storage reservoir).

Bioswales are a common practise utilized within the public ROW by many municipalities to achieve the required quality control volume. Below is a schematic of a constructed infiltration system in a low-density residential neighborhood within the Wilket/Milne Creek subwatershed of the Don River. The figure was taken from the report "*Performance Assessment Of A Swale And Perforated Pipe Stormwater Infiltration System, Toronto, Ontario"*.

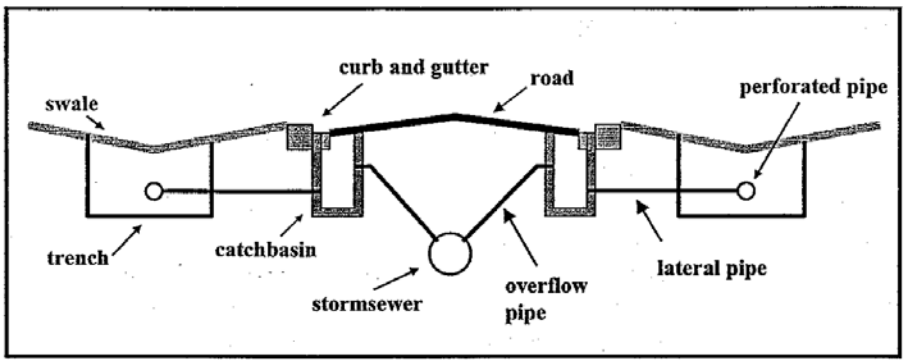


Figure 1: Simplified schematic of the infiltration system.

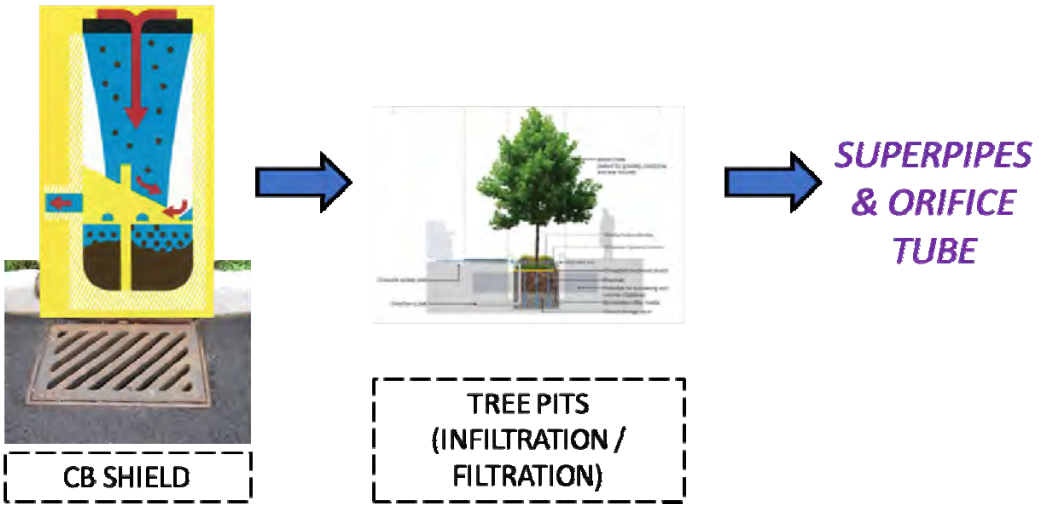
Preliminary infiltration volumes required with the bioswales to achieve the 60% TSS removal are presented in the below table.

Table 4.5: Required Quality control Volume

Catchment	Area (ha)	Required Storage Volume (m3/ha) *	Required Storage Volume (m3)
201	3.47	20	69
202	0.54	20	11
203	0.61	20	12
204	0.76	20	23
205	2.00	20	32
206	1.63	20	33

* Based on MOE Table 3.2

Option 2: CB Shield >Tree pits ->Super pipe ->Orifice Tube

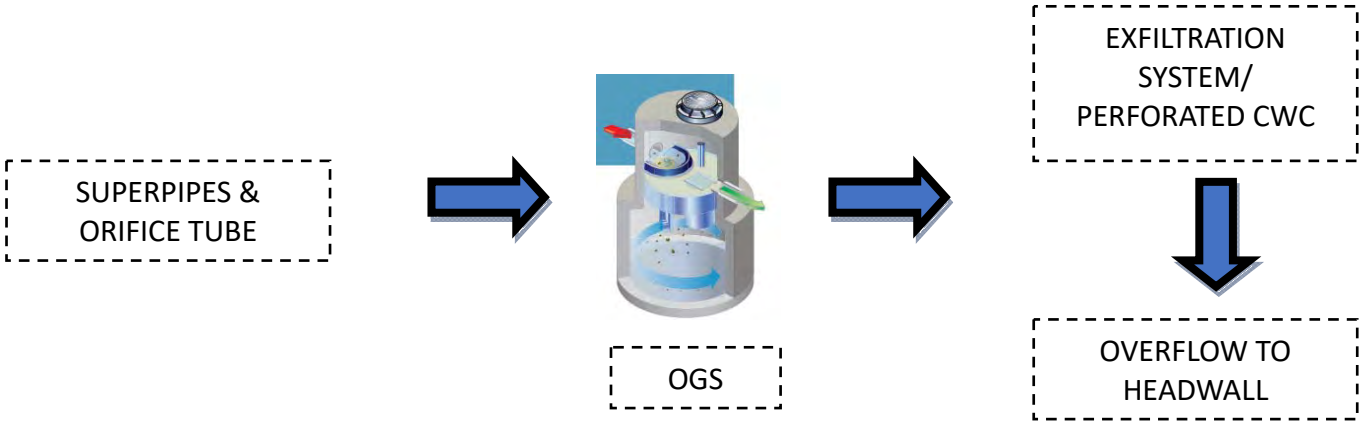


This option involves stormwater runoff from the road ROW to drain into manholes equipped with specially designed catch basin shields, further referred as CB Shields. The CB Shields technology allows sediments from the runoff to be retained at the bottom of the CB Shield sump and the water flow to be further directed to soil cells/tree pits. Based on an Environmental Technology Verification evaluation, application of catch basin shields can provide 50% TSS removal.

The bioretention facilities such as tree pits and soil cells can be incorporated within ROW and parking lots to provide quality control and infiltration for the site. The 36m wide proposed Kirby Road extension ROW can include either Tree Pits (Filterra from Imbrium Systems) or Soil Cells (Cupolex Soil Cells) installed in the boulevards to provide the required quality control. The infiltration bed within the soil cells/tree pits will be sized to provide the additional 60% TSS removal.

Overflow from the underground bioretention facility will be directed into a superpipe where flows will be chocked before being discharged into the creek. The required infiltration volumes for each catchment are presented in **Table 4.6.**

Option 3: Super pipe ->Orifice Tube->OGS->CWC



The third option involves an exfiltration system to provide the required quality control and to promote infiltration. The surface runoff from the proposed ROW will be captured by catch basins and directed towards the proposed super pipe equipped with an orifice control at the end to provide the required quantity control. The controlled flow would be directed towards the OGS to achieve a 50% TSS removal. From the OGS the flow will be directed towards the proposed perforated Clean Water Collector (CWC) pipe system promoting infiltration. The perforated CWC pipes will be sized to provide the maximum of the water balance requirements and 60% TSS removal. Overflow from the CWC system will be directed towards outlets with headwalls. The sizing of the CWC was completed and is presented in **Appendix C** and discussed in **Section 4.5** below.

The anticipated combined TSS removal efficiency of the OGS and CWC would be greater than 80% overall TSS removal. The required infiltration volumes to satisfy the quality control (60% TSS removal) for each catchment are presented in **Table 4.6**.

4.5 Water Balance

The proposed Kirby Road Alignment 5A is located within a significant groundwater recharge area. Based on the existing soil conditions and Environment Canada climate data, water balance calculations were completed by Terraprobe and are presented in Draft Revised Hydrogeologic Study, Kirby Road Extension, City of Vaughan report (Refer to **Appendix A**). The pre-

development and post development water balance results are summarized in **Tables 4.3** below. Please note that the difference in the area calculated by Terraprobe and Schaeffers Consulting Engineers (SCE) is mainly because SCE calculations include external drainage mainly slopes draining to the site in post development conditions.

Table 4.6: Water Balance Summary

	Area (m^2)	**Precipitation (m^3)**	**Evapotranspiration(m^3)**	**Infiltration (m^3)**	**Runoff (m^3)**
Pre-development	73222	68475	34854	21015	9006
Post-development	73222	64875	13738	8283	42854

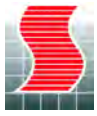
According to the Terraprobe calculations, approximately 12,732 m^3 of volume is required to be infiltrated in the post-development stage. As per the attached calculations in **Appendix C,** infiltrating approximately 8mm rainfall on site will help satisfy the water balance calculations. The required volume to be infiltrated on site is approximately 372m^3

The proposed LID measures – Bioswales, Tree pits or perforated Clean water collectors will be sized to provide the required infiltration volume on site.

Preliminary calculations show that the required footprint of Bioswale/Tree pits (Soil cells) is approximately 1300m^2. A bioretention cell with a length of approximately 1000m (500m on either side of the road) and width of 1.5m will provide us the required infiltration volume of 432m^3 (1000m x 1.5m x 0.72m x 0.40 = 432m^3).

With regard to the perforated CWC pipe system, the required infiltration volume can be provided by installing a 450mm diameter perforated pipes within 2m wide trenches. The required length of the CWC is sized and presented in **Appendix C**.

The LID sizing calculations presented above and in **Appendix C** are preliminary and can be further refined during the detail design stage. A drawdown time of 48 hours was considered for preliminary LID sizing.



5.0 FLOODPLAIN ANALYSIS

A floodplain study has been carried out to establish the regulatory flood limits along the East Patterson and to demonstrate that there are no adverse impacts to the upstream and downstream floodplain due to the proposed watercourse crossing. As discussed previously, the proposed Kirby road extension disturbs the drainage flow path of the East Patterson Creek which conveys drainage from the lands north of the proposed road. In order to safely convey this drainage a culvert was sized to satisfy hydraulic requirements as well as crossing requirements.

The regional peak flow rate was calculated for post development drainage areas draining to the creek which was used for floodplain analysis. Results of the analysis revealed that the difference in water surface elevations between the pre-development and the post-development conditions were negligible. Results of the model revealed that the proposed culvert (6.10 m x 2.74 m) will not be overtopped during the 100-year and regional flood. A technical report entitled "Floodplain analysis report, Kirby Road Extension" dated August 2019, is attached in **Appendix D** that provides technical background of the floodplain study.

The floodplain analysis was completed by including the additional flows from the Catchment 301E that are proposed to be conveyed to the creek in the post development conditions. As mentioned above, the increase in water elevations is negligible, therefore no constraints are expected.

6.0 CLOSING REMARKS

This report has provided an overview of the stormwater management plan for the proposed Kirby Road extension between Bathurst and Dufferin Road. The Key points discussed in the memo are:

- Conformance with the City of Vaughan and Toronto Region and Conservation Area Design Criteria.
- Base Flows to the PSW remain the same under the post-development conditions.
- Culverts design to safely convey external flow draining towards the site.
- Treatment train approach to provide Enhanced stormwater quality and quantity protection.
- Implementation of various LID methods to provide enhanced stormwater management.

We trust this document is satisfactory for your needs at this time. Should you have any questions of comments however, please do not hesitate to contact our office.

Respectfully submitted,

SCHAEFFER & ASSOCIATES LTD

Yashaswy Gollamudi, B.Sc.
Water Resources Analyst

Koryun Shahbikian, P.Eng., PMP
Associate

Appendix A
Background Information
- Draft Hydrogeologic Study Report
-Preliminary Geotechnical Report
(SEE ATTACHED CD)

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Appendix B
Culvert Calculations

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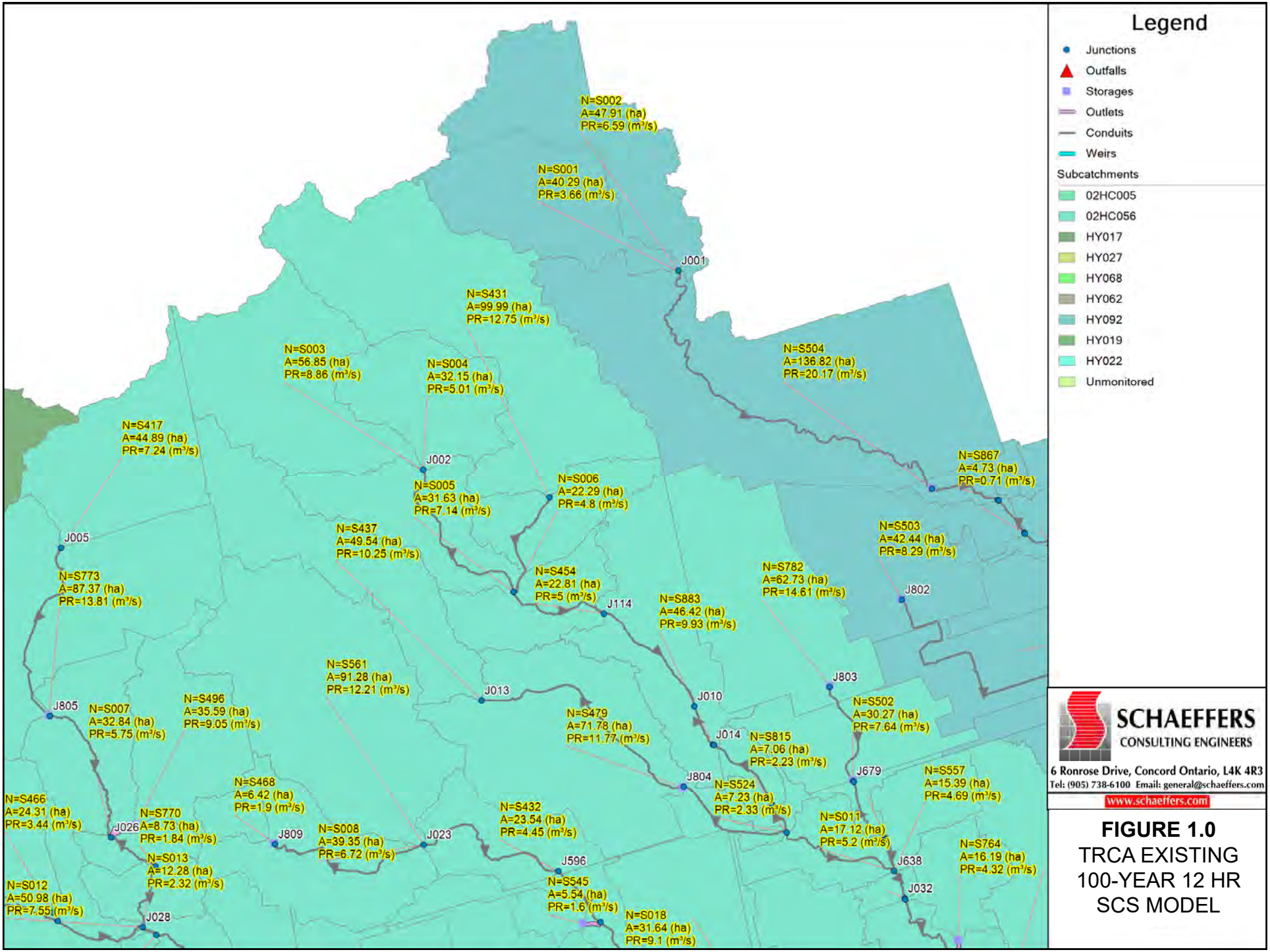

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FIGURE 1.0
TRCA EXISTING
100-YEAR 12 HR
SCS MODEL

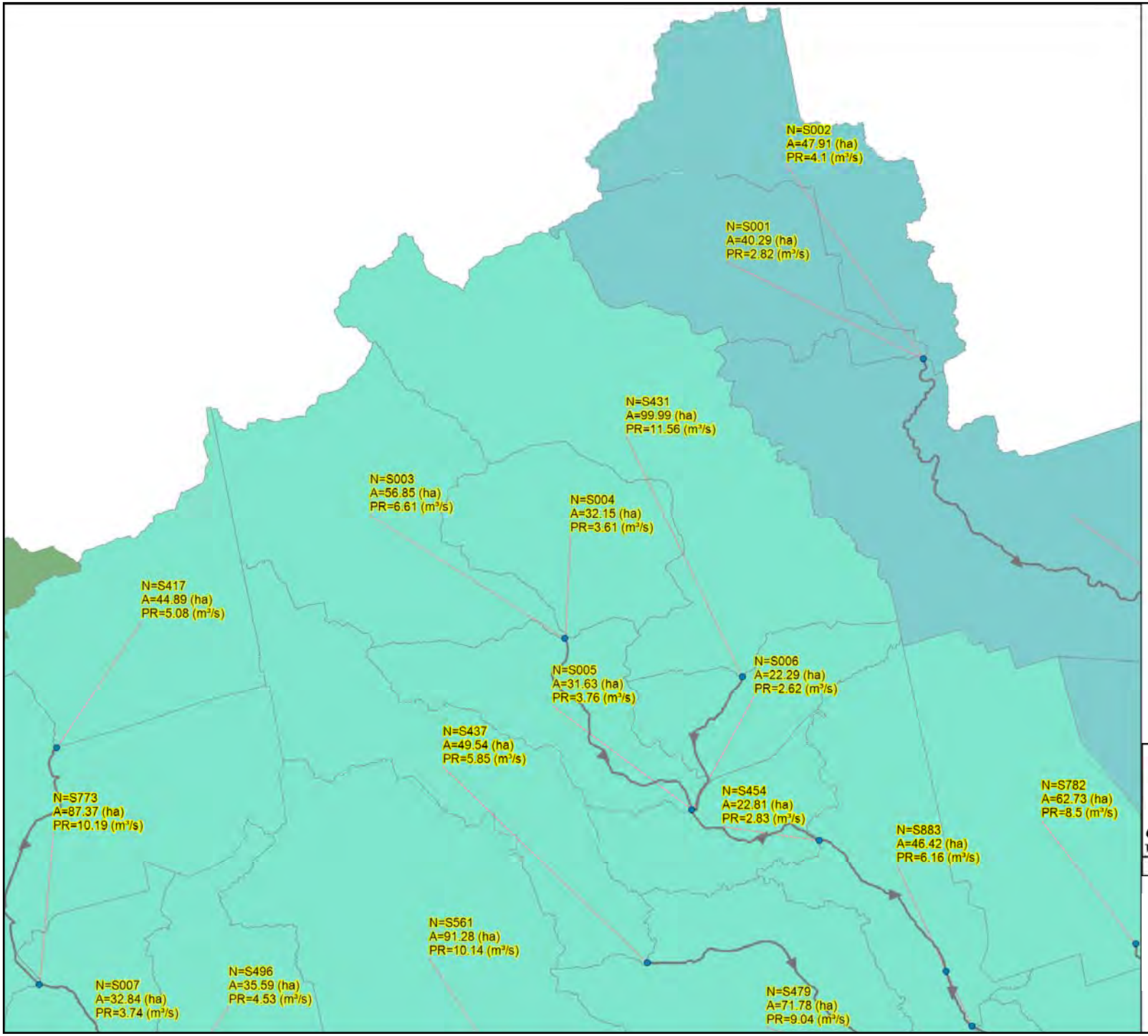

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FIGURE 2.0
TRCA EXISTING
REGIONAL MODEL

Culvert Flow Calculations - Kirby Road Extension

Project No.: 4339
Project Name: Kirby Road Extension
Location: City of Vaughan
Date: 2019-08-23

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Catchment	Area (ha)	VO model Regional flow (cms)	VO model 100-year 12hr SCS Flow (cms)
301E	7.42	0.816	0.26
302E	57.77	5.585	1.34
303E	11.88	1.018	0.22
304E	13.93	1.63	0.69
305E	72.56	7.391	2.67

Catchment	Area (ha)	TRCA existing PCSWMM Catchment Name	Total Area of catchment (ha)	Total 100-year 12hr SCS flow of the catchment (cms)	Interpolated 100-year Flow calculations for culvert sizing (cms)
301E	7.42	S4371	49.54	10.25	2.47
302E	57.77	S003	56.85	8.86	8.97
303E	11.88	S004	32.15	5.01	2.37
304E	13.93	S004	32.15	5.01	2.68
305E	72.56	S4311	99.99	12.75	10.02

Catchment	Area (ha)	TRCA existing PCSWMM Catchment Name	Total Area of catchment (ha)	Total Regional flow of the catchment (cms)	Interpolated Regional flow calculations for culvert sizing (cms)
301E	7.42	S4371	49.54	5.85	1.41
302E	57.77	S003	56.85	6.65	6.73
303E	11.88	S004	32.15	3.61	1.71
304E	13.93	S004	32.15	3.61	1.93
305E	72.56	S4311	99.99	11.56	9.09

Transposition and interpolation of data from a stream gauge can be done based on the Modified Index Flood method as follows:

$Q2 = Q1 [A2 / A1]^{0.75}$

Where:
Q1 = Known peak discharge
Q2 = Unknown peak discharge
A1 = Known basin area
A2 = Unknown basin area

Culvert Calculator Report
Cacthment - 301E <August 2019>

Solve For: Section Size

Culvert Summary					
Allowable HW Elevation	291.05	m	Headwater Depth/Height	1.10	
Computed Headwater Eleva	291.03	m	Discharge	2.4700	m³/s
Inlet Control HW Elev.	290.98	m	Tailwater Elevation	288.05	m
Outlet Control HW Elev.	291.03	m	Control Type	Entrance Control	

Grades					
Upstream Invert	289.69	m	Downstream Invert	288.03	m
Length	42.50	m	Constructed Slope	0.039059	m/m

Hydraulic Profile					
Profile	S2		Depth, Downstream	0.50	m
Slope Type	Steep		Normal Depth	0.46	m
Flow Regime	Supercritical		Critical Depth	0.86	m
Velocity Downstream	5.51	m/s	Critical Slope	0.005111	m/m

Section					
Section Shape	Circular		Mannings Coefficient	0.013	
Section Material	Concrete		Span	1.22	m
Section Size	1200 mm		Rise	1.22	m
Number Sections	1				

Outlet Control Properties					
Outlet Control HW Elev.	291.03	m	Upstream Velocity Head	0.40	m
Ke	0.20		Entrance Loss	0.08	m

Inlet Control Properties					
Inlet Control HW Elev.	290.98	m	Flow Control	Unsubmerged	
Inlet Type	Beveled ring, 33.7° bevels		Area Full	1.2	m²
K	0.00180		HDS 5 Chart	3	
M	2.50000		HDS 5 Scale	B	
C	0.02430		Equation Form	1	
Y	0.83000				

Culvert Calculator Report
Catchment - 302E <August 2019>

Solve For: Headwater Elevation

Culvert Summary					
Allowable HW Elevation	279.00	m	Headwater Depth/Height	0.86	
Computed Headwater Eleva	278.08	m	Discharge	9.0000	m³/s
Inlet Control HW Elev.	277.94	m	Tailwater Elevation	276.17	m
Outlet Control HW Elev.	278.08	m	Control Type	Entrance Control	

Grades					
Upstream Invert	276.50	m	Downstream Invert	275.90	m
Length	60.00	m	Constructed Slope	0.010000	m/m

Hydraulic Profile					
Profile	S2		Depth, Downstream	0.59	m
Slope Type	Steep		Normal Depth	0.56	m
Flow Regime	Supercritical		Critical Depth	0.85	m
Velocity Downstream	4.16	m/s	Critical Slope	0.002911	m/m

Section					
Section Shape	Box		Mannings Coefficient	0.013	
Section Material	Concrete		Span	3.66	m
Section Size	3660 x 1830 mm		Rise	1.83	m
Number Sections	1				

Outlet Control Properties					
Outlet Control HW Elev.	278.08	m	Upstream Velocity Head	0.43	m
Ke	0.70		Entrance Loss	0.30	m

Inlet Control Properties					
Inlet Control HW Elev.	277.94	m	Flow Control	Unsubmerged	
Inlet Type	0° wingwall flares		Area Full	6.7	m²
K	0.06100		HDS 5 Chart	8	
M	0.75000		HDS 5 Scale	3	
C	0.04230		Equation Form	1	
Y	0.82000				

Culvert Calculator Report
Catchment - 303E <August 2019>

Solve For: Section Size

Culvert Summary					
Allowable HW Elevation	283.00	m	Headwater Depth/Height	1.51	
Computed Headwater Eleva	282.86	m	Discharge	2.3700	m³/s
Inlet Control HW Elev.	282.86	m	Tailwater Elevation	280.00	m
Outlet Control HW Elev.	282.83	m	Control Type	Inlet Control	

Grades					
Upstream Invert	281.25	m	Downstream Invert	279.65	m
Length	48.00	m	Constructed Slope	0.033400	m/m

Hydraulic Profile					
Profile	S2		Depth, Downstream	0.66	m
Slope Type	Steep		Normal Depth	0.66	m
Flow Regime	Supercritical		Critical Depth	0.87	m
Velocity Downstream	4.10	m/s	Critical Slope	0.016551	m/m

Section					
Section Shape	Circular		Mannings Coefficient	0.020	
Section Material	Concrete		Span	1.07	m
Section Size	1050 mm		Rise	1.07	m
Number Sections	1				

Outlet Control Properties					
Outlet Control HW Elev.	282.83	m	Upstream Velocity Head	0.47	m
Ke	0.50		Entrance Loss	0.24	m

Inlet Control Properties					
Inlet Control HW Elev.	282.86	m	Flow Control	Submerged	
Inlet Type	Square edge w/headwall		Area Full	0.9	m²
K	0.00980		HDS 5 Chart	1	
M	2.00000		HDS 5 Scale	1	
C	0.03980		Equation Form	1	
Y	0.67000				

Culvert Calculator Report
Catchment - 304E <August 2019>

Solve For: Section Size

Culvert Summary					
Allowable HW Elevation	286.00	m	Headwater Depth/Height	1.75	
Computed Headwater Eleva	285.67	m	Discharge	2.6800	m³/s
Inlet Control HW Elev.	285.67	m	Tailwater Elevation	282.08	m
Outlet Control HW Elev.	285.54	m	Control Type	Inlet Control	

Grades					
Upstream Invert	283.80	m	Downstream Invert	281.38	m
Length	74.00	m	Constructed Slope	0.032703	m/m

Hydraulic Profile					
Profile	S2		Depth, Downstream	0.72	m
Slope Type	Steep		Normal Depth	0.72	m
Flow Regime	Supercritical		Critical Depth	0.92	m
Velocity Downstream	4.16	m/s	Critical Slope	0.019445	m/m

Section					
Section Shape	Circular		Mannings Coefficient	0.020	
Section Material	Concrete		Span	1.07	m
Section Size	1050 mm		Rise	1.07	m
Number Sections	1				

Outlet Control Properties					
Outlet Control HW Elev.	285.54	m	Upstream Velocity Head	0.55	m
Ke	0.50		Entrance Loss	0.27	m

Inlet Control Properties					
Inlet Control HW Elev.	285.67	m	Flow Control	N/A	
Inlet Type	Square edge w/headwall		Area Full	0.9	m²
K	0.00980		HDS 5 Chart	1	
M	2.00000		HDS 5 Scale	1	
C	0.03980		Equation Form	1	
Y	0.67000				

Culvert Calculator Report
Catchment - 305E <August 2019>

Solve For: Section Size

Culvert Summary					
Allowable HW Elevation	286.00	m	Headwater Depth/Height	0.59	
Computed Headwater Eleva	285.97	m	Discharge	7.3910	m³/s
Inlet Control HW Elev.	285.76	m	Tailwater Elevation	282.58	m
Outlet Control HW Elev.	285.97	m	Control Type	Entrance Control	

Grades					
Upstream Invert	284.17	m	Downstream Invert	282.53	m
Length	92.50	m	Constructed Slope	0.017730	m/m

Hydraulic Profile					
Profile	S2		Depth, Downstream	1.09	m
Slope Type	Steep		Normal Depth	1.09	m
Flow Regime	Supercritical		Critical Depth	1.16	m
Velocity Downstream	3.16	m/s	Critical Slope	0.014102	m/m

Section					
Section Shape	Circular		Mannings Coefficient	0.030	
Section Material	Concrete		Span	3.05	m
Section Size	3000 mm		Rise	3.05	m
Number Sections	1				

Outlet Control Properties					
Outlet Control HW Elev.	285.97	m	Upstream Velocity Head	0.43	m
Ke	0.50		Entrance Loss	0.22	m

Inlet Control Properties					
Inlet Control HW Elev.	285.76	m	Flow Control	N/A	
Inlet Type	Square edge w/headwall		Area Full	7.3	m²
K	0.00980		HDS 5 Chart	1	
M	2.00000		HDS 5 Scale	1	
C	0.03980		Equation Form	1	
Y	0.67000				

Table 1: Existing Catchment Area Drainage Characteristics

Catchment	Area	Soil Characteristics	Hydrologic Soil Group	Soil Conservation Science Curve Number (SCS CN)	Initial Abstraction	Watershed Slope, S_w	Overland Flow Length, L	Runoff Coefficient, C	Time of Concentration, t_c (Airport)	Time to Peak, tp = 0.67tc (Airport)	Time to Peak, tp = 0.67tc (Airport)
	(ha)	*Series; Symbol*			*(mm)*	*(%)*	*(m)*		minutes	minutes	(hrs)
307E	24.25	Pontypool; Psl Based on the Geotechnical Report for the proposed subdivision, the predominant soil on site is sand and sand to silty sand	AB	56	5	3.0	794.2	0.28	52.5	35.2	0.59
305E	72.56	Pontypool; Psl Chinguacousey; Chc Oc Woburn; Wos	A D D A	73	5	2.1	1804.4	0.25	92.2	61.8	1.03
304E	13.93	Pontypool; Psl	A	67	5	3.3	646.5	0.25	47.7	32.0	0.53
303E	11.88	Pontypool; Psl	A	36	5	4.0	540.8	0.25	40.8	27.3	0.46
302E	57.77	Pontypool; Psl	A	57	5	2.1	1311.9	0.25	78.9	52.9	0.88
301E	7.42	Pontypool; Psl	A	57	5	2.1	443.7	0.25	46.0	30.8	0.51

Notes:

1. Soil information was extracted from the Soil Map of York County

2. The time of concentration is calculated using the Airport Equation when the runoff coefficient was less than or equal to 0.40 and the Bransby-Williams Equation when the runoff coefficient was more than 0.40.

3. Watershed slope was calculated using the Equivalent Slope Method (Ministry of Transportation).
4. Initial Abstraction of 5mm was considered for conservative reason.

Airport Equation:

Assumptions: Runoff Coefficient, C, is less than or equal to 0.4

$$t_c = 3.26 * (1.1 - C) * L^{0.5} * S_w^{-0.33}$$

Where:
t_c is the time of concentration (minutes);
C is the runoff coefficient;
L is the watershed length (m); and
S_w is the watershed slope (%).

Bransby Williams Equations:

Assumptions: Runoff Coefficient, C, is greater than 0.4

$$t_c = 0.057 * L * S_w^{-0.2} * A^{-0.1}$$

Where:
t_c is the time of concentration (minutes);
A is the watershed area (ha);
L is the watershed length (m); and
S_w is the watershed slope (%).

References:

Civica Infrastructure Inc. March 2017. Visual OTTHYMO Reference Manual Version 5.0. Civica Municipal Water Resources.

Urban Hydrology for Small Watersheds. June 1986. Technical Release (TR)-55. Second Edition. Natural Resources Conservation Service. Conservation Engineering Division. United States Department of Agriculture.

Table 2: Watershed Slope Calculations

Equivalent Slope

Catchment	Number of Divisions of Equal Length	Equal Lengths *(m)*	Upstream Elevation *(mAMSL)*	Downstream Elevation *(mAMSL)*	Slope *(m/m)*	Slope to the power of -0.5 *(m/m)*	Sum of Length *(m)*	Sum of Slope to the power of -0.5	Watershed Slope, Sw *(%)*
305E	1	360.9	325	320	0.014	8.5	1804.4	34.6	2.1
	2	360.9	320	311	0.025	6.3			
	3	360.9	311	299.5	0.032	5.6			
	4	360.9	299.5	291.9	0.021	6.9			
	5	360.9	291.9	285	0.019	7.2			
304E	1	129.3	311	299.5	0.089	3.4	646.5	27.7	3.3
	2	129.3	299.5	295.1	0.034	5.4			
	3	129.3	295.1	291	0.032	5.6			
	4	129.3	291	287.4	0.028	6.0			
	5	129.3	287.4	285	0.019	7.3			
303E	1	108.2	350	297.4	0.486	1.4	540.8	25.0	4.0
	2	108.2	297.4	292.5	0.045	4.7			
	3	108.2	292.5	288.8	0.034	5.4			
	4	108.2	288.8	286.5	0.021	6.9			
	5	108.2	286.5	284	0.023	6.6			
302E	1	262.4	322	297.2	0.095	3.3	1311.9	34.7	2.1
	2	262.4	297.2	290.3	0.026	6.2			
	3	262.4	290.3	285.7	0.018	7.6			
	4	262.4	285.7	282	0.014	8.4			
	5	262.4	282	279	0.011	9.4			
301E	1	88.7	300	297.5	0.028	6.0	443.7	34.9	2.1
	2	88.7	297.5	296	0.017	7.7			
	3	88.7	296	292.8	0.036	5.3			
	4	88.7	292.8	291.3	0.017	7.7			
	5	88.7	291.3	290	0.015	8.3			
307E	1	158.8	300	289	0.069	3.8	794.2	29.0	3.0
	2	158.8	289	281	0.050	4.5			
	3	158.8	281	276	0.031	5.6			
	4	158.8	276	272.1	0.025	6.4			
	5	158.8	272.1	270	0.013	8.7			

Notes:
1. The watershed slope is calculated using the Equivalent Slope Method using the Ministry of Transportation (MTO, 1997) Drainage Manual guidelines in Chapter 8 (page 27). The Equalivent Slope Method equation is provided below. It should be noted that the Equivalent Slope Method are performed on the overland flow path (and not the concentrated flow path or watershed reach) to calculated the time of concentration input parameter for the Visual OTTHYMO model. The concentrated flow path or channel was modelled as a channel in Visual OTTHYMO and therefore the channel time of concentration is calculated in Visual OTTHYMO when flow is routed through the channel.

Equivalent Slope Method:

$$S_w = 100 * \left[\frac{n}{\Sigma(S_n^{-0.5})}\right]^2$$

Where:
S_w is the watershed slope (%);
n is the number of divisions of equal length; and
S_n is the slope of the individual divisions (m/m).

Source: (MTO, 1997)

References:
1. Ministry of Transportation (MTO). 1997. Drainage Management Manual Part 3. Drainage and Hydrology Section. Transportation Engineering Branch. Quality and Standards Division. Government of Ontario.

85/10 method

Catchment	L (m)	10% Elevatic (masl)	85% Elevation (masl)	Lf (m)	hf (m)		slope	
1	1804.21	288	320	0	0	0	2.364839274	
2	646.514	286	302	0	0	0	3.299748085	
3	542.925	284.5	299	0	0	0	3.560958389	
4	145.374	288	300	29.321	5.5		8.154611433	*more than 10% of the length is rapids (reevaluate if those are rapids) should use equivalent slope
5	1311.914	281	301.5	0	0	0	2.083469902	
6	474.414	290.5	297.5	0	0	0	1.967339356	

Table 3: Curve Number Calculations

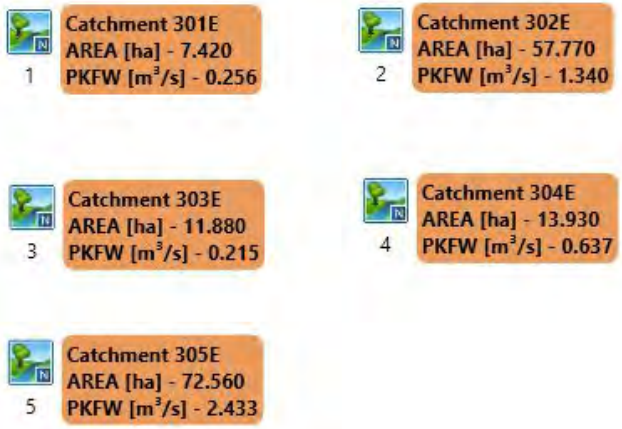
Catchment	Land Type	Area (ha)	Soil Type	Hydrologic Soil Group	Hydrologic Condition	CN (based on Land Type and Soil Type)	CN*Area	Weighted Curve Number	
305E	Row- Crops	16.71	Clay Loam (Chc)	D	Good	89	1486.8	73	
	Straight Row	4.17	Clay Loam (Oc)	D	Good	89	370.9		
		27.87	Sandy Loam (Psl)	A	Good	67	1867.2		
		23.82	Sandy Loam (Wos)	A	Good	67	1595.8		
304E	Row- Crops	13.930	Pontypool; Psl	A	Good	67	933.3	67	
	Straight Row								
303E	Woodlot	11.88	Pontypool; Psl	A	Fair	30	356.4	36	Bumped up the CN to be more conservative
302E	Woods and crop combination	57.77	Pontypool; Psl	A		57	3292.9	57	Bumped up the CN to be more conservative
301E	Woods and crop combination	7.42	Pontypool; Psl	A		57	422.9	57	Bumped up the CN to be more conservative
307E	Gravel pit	4.34	Pontypool; Psl	AB		76	329.8	56	
	Pasture	6.91	Based on the Geotechnical Report for	AB	Fair	59	407.7		
	Woodland	10.91	the proposed subdivision, the	AB	Good	45	491.0		
	Agriculatural	2.08	predominant soil on site is sand and sand to silty sand	AB	Good	67	139.4		

References:

Urban Hydrology for Small Watersheds. June 1986. Technical Release (TR)-55. Second Edition. Natural Resources Conservation Service. Conservation Engineering Division. United States Department of Agriculture.

Table4 :Runoff calculations

Catchment	Land Type	Area (ha)	C	C*Area	Weighted Curve Number
307E	Gravel pit	4.34	0.4	1.7	0.28
	Pasture	6.91	0.25	1.7	
	Woodland	10.91	0.25	2.7	
	Agriculatural	2.09	0.25	0.5	



Schematic | Hydrograph Results (instance) ×

Run: Run 01 Show All Runs

Run	NHYD	DT [hr]	AREA [ha]	PKFW [m³/s]	TP [hr]	RV (mm)	DWF [m³/s]
Run 02	1	0.083	7.420	0.279	6.333	26.074	0.000
Run 01	1	0.083	7.420	0.256	1.583	18.148	0.000
Run 02	2	0.083	57.770	1.501	6.833	26.076	0.000
Run 01	2	0.083	57.770	1.340	2.083	18.149	0.000
Run 02	3	0.083	11.880	0.239	6.333	13.440	0.000
Run 01	3	0.083	11.880	0.215	1.500	9.081	0.000
Run 01	4	0.083	13.930	0.637	1.583	24.375	0.000
Run 02	4	0.083	13.930	0.687	6.417	34.332	0.000
Run 01	5	0.083	72.560	2.433	2.250	29.045	0.000
Run 02	5	0.083	72.560	2.673	7.000	40.314	0.000

SCHAEFFERS CONSULTING ENGINEERS

Visual OTTHYMO™ Schematic

Culvert Sizing
(100 year)

Job #: 4339 **Date: May 2019**

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       V    V   I    SSSSS  U   U    A    L
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

        OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
       O   O    T      T    H   H   Y Y   MM MM  O   O
       O   O    T      T    H   H    Y    M M M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
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                  *****  D E T A I L E D   O U T P U T *****


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 5.0\VO2\voin.dat
  Output  filename: C:\Users\ygollamudi\AppData\Local\Civica\VH5\bd5bfc66-6a34-
454c-8f53-cc4c6a622e78\ff2d25d5-0e85-4278-95c6-3f20919db7b0\s
  Summary filename: C:\Users\ygollamudi\AppData\Local\Civica\VH5\bd5bfc66-6a34-
454c-8f53-cc4c6a622e78\ff2d25d5-0e85-4278-95c6-3f20919db7b0\s


DATE: 05-08-2019                          TIME: 01:18:22

USER:


COMMENTS: _____________________________________________________

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  ***********************************************
  ** SIMULATION : Run 01                       **
  ***********************************************

--------------------
| CHICAGO STORM    |    IDF curve parameters: A=1770.000
| Ptotal= 73.74 mm |                          B=   4.000
--------------------                          C=   0.820
                       used in:   INTENSITY =  A / (t + B)^C

                       Duration of storm  =  3.00 hrs
                       Storm time step    = 10.00 min
                       Time to peak ratio =  0.33

                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.17    5.92 |  1.00  203.31 |  1.83   10.60 |  2.67    5.65
                0.33    7.33 |  1.17   50.96 |  2.00    8.96 |  2.83    5.19
                0.50    9.77 |  1.33   25.51 |  2.17    7.78 |  3.00    4.81
                0.67   15.10 |  1.50   17.18 |  2.33    6.90 |
                0.83   38.21 |  1.67   13.06 |  2.50    6.21 |

--------------------------------------------------------------------------------
--------------------
| CALIB            |
| NASHYD   (  0005)|   Area    (ha)=  72.56   Curve Number    (CN)= 73.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   5.00   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   1.03

        NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                              ---- TRANSFORMED HYETOGRAPH ----
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
               0.083    5.92 | 0.833   38.21 | 1.583   13.06 |  2.33    6.90
               0.167    5.92 | 0.917  203.30 | 1.667   13.06 |  2.42    6.21
               0.250    7.33 | 1.000  203.31 | 1.750   10.60 |  2.50    6.21
               0.333    7.33 | 1.083   50.96 | 1.833   10.60 |  2.58    5.65
               0.417    9.77 | 1.167   50.96 | 1.917    8.96 |  2.67    5.65
               0.500    9.77 | 1.250   25.51 | 2.000    8.96 |  2.75    5.19
               0.583   15.10 | 1.333   25.51 | 2.083    7.78 |  2.83    5.19
               0.667   15.10 | 1.417   17.18 | 2.167    7.78 |  2.92    4.81
               0.750   38.21 | 1.500   17.18 | 2.250    6.90 |  3.00    4.81

    Unit Hyd Qpeak  (cms)=   2.691

    PEAK FLOW       (cms)=   2.433 (i)
    TIME TO PEAK    (hrs)=   2.250
    RUNOFF VOLUME    (mm)=  29.045
    TOTAL RAINFALL   (mm)=  73.740
    RUNOFF COEFFICIENT   =   0.394

    (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------
--------------------
| CHICAGO STORM    |    IDF curve parameters: A=1770.000
| Ptotal= 73.74 mm |                          B=   4.000
--------------------                          C=   0.820
                       used in:   INTENSITY =  A / (t + B)^C

                       Duration of storm  =  3.00 hrs
                       Storm time step    = 10.00 min
                       Time to peak ratio =  0.33

                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.17    5.92 |  1.00  203.31 |  1.83   10.60 |  2.67    5.65
                0.33    7.33 |  1.17   50.96 |  2.00    8.96 |  2.83    5.19
                0.50    9.77 |  1.33   25.51 |  2.17    7.78 |  3.00    4.81
                0.67   15.10 |  1.50   17.18 |  2.33    6.90 |
                0.83   38.21 |  1.67   13.06 |  2.50    6.21 |

--------------------------------------------------------------------------------
--------------------
| CALIB            |
| NASHYD   (  0004)|   Area    (ha)=  13.93   Curve Number    (CN)= 67.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   5.00   # of Linear Res.(N)= 3.00
```

---------- U.H. Tp(hrs)= 0.53

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	5.92	0.833	38.21	1.583	13.06	2.33	6.90
0.167	5.92	0.917	203.30	1.667	13.06	2.42	6.21
0.250	7.33	1.000	203.31	1.750	10.60	2.50	6.21
0.333	7.33	1.083	50.96	1.833	10.60	2.58	5.65
0.417	9.77	1.167	50.96	1.917	8.96	2.67	5.65
0.500	9.77	1.250	25.51	2.000	8.96	2.75	5.19
0.583	15.10	1.333	25.51	2.083	7.78	2.83	5.19
0.667	15.10	1.417	17.18	2.167	7.78	2.92	4.81
0.750	38.21	1.500	17.18	2.250	6.90	3.00	4.81

Unit Hyd Qpeak (cms)= 1.004

PEAK FLOW (cms)= 0.637 (i)
TIME TO PEAK (hrs)= 1.583
RUNOFF VOLUME (mm)= 24.375
TOTAL RAINFALL (mm)= 73.740
RUNOFF COEFFICIENT = 0.331

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

CHICAGO STORM Ptotal= 73.74 mm	IDF curve parameters: A=1770.000 B= 4.000 C= 0.820 used in: INTENSITY = A / (t + B)^C Duration of storm = 3.00 hrs Storm time step = 10.00 min Time to peak ratio = 0.33

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	5.92	1.00	203.31	1.83	10.60	2.67	5.65
0.33	7.33	1.17	50.96	2.00	8.96	2.83	5.19
0.50	9.77	1.33	25.51	2.17	7.78	3.00	4.81
0.67	15.10	1.50	17.18	2.33	6.90		
0.83	38.21	1.67	13.06	2.50	6.21		

CALIB NASHYD (0003) ID= 1 DT= 5.0 min	Area (ha)= 11.88 Curve Number (CN)= 36.0 Ia (mm)= 5.00 # of Linear Res.(N)= 3.00 U.H. Tp(hrs)= 0.46

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	5.92	0.833	38.21	1.583	13.06	2.33	6.90
0.167	5.92	0.917	203.30	1.667	13.06	2.42	6.21
0.250	7.33	1.000	203.31	1.750	10.60	2.50	6.21
0.333	7.33	1.083	50.96	1.833	10.60	2.58	5.65
0.417	9.77	1.167	50.96	1.917	8.96	2.67	5.65
0.500	9.77	1.250	25.51	2.000	8.96	2.75	5.19
0.583	15.10	1.333	25.51	2.083	7.78	2.83	5.19
0.667	15.10	1.417	17.18	2.167	7.78	2.92	4.81
0.750	38.21	1.500	17.18	2.250	6.90	3.00	4.81

Unit Hyd Qpeak (cms)= 0.986

PEAK FLOW (cms)= 0.215 (i)
TIME TO PEAK (hrs)= 1.500
RUNOFF VOLUME (mm)= 9.081
TOTAL RAINFALL (mm)= 73.740
RUNOFF COEFFICIENT = 0.123

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

CHICAGO STORM Ptotal= 73.74 mm	IDF curve parameters: A=1770.000 B= 4.000 C= 0.820 used in: INTENSITY = A / (t + B)^C Duration of storm = 3.00 hrs Storm time step = 10.00 min Time to peak ratio = 0.33

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	5.92	1.00	203.31	1.83	10.60	2.67	5.65
0.33	7.33	1.17	50.96	2.00	8.96	2.83	5.19
0.50	9.77	1.33	25.51	2.17	7.78	3.00	4.81
0.67	15.10	1.50	17.18	2.33	6.90		
0.83	38.21	1.67	13.06	2.50	6.21		

CALIB NASHYD (0002) ID= 1 DT= 5.0 min	Area (ha)= 57.77 Curve Number (CN)= 57.0 Ia (mm)= 5.00 # of Linear Res.(N)= 3.00 U.H. Tp(hrs)= 0.88

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	5.92	0.833	38.21	1.583	13.06	2.33	6.90
0.167	5.92	0.917	203.30	1.667	13.06	2.42	6.21
0.250	7.33	1.000	203.31	1.750	10.60	2.50	6.21
0.333	7.33	1.083	50.96	1.833	10.60	2.58	5.65
0.417	9.77	1.167	50.96	1.917	8.96	2.67	5.65
0.500	9.77	1.250	25.51	2.000	8.96	2.75	5.19
0.583	15.10	1.333	25.51	2.083	7.78	2.83	5.19
0.667	15.10	1.417	17.18	2.167	7.78	2.92	4.81

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               0.750   38.21 | 1.500   17.18 | 2.250    6.90 |  3.00    4.81

     Unit Hyd Qpeak  (cms)=   2.507

     PEAK FLOW       (cms)=   1.340 (i)
     TIME TO PEAK    (hrs)=   2.083
     RUNOFF VOLUME    (mm)=  18.149
     TOTAL RAINFALL   (mm)=  73.740
     RUNOFF COEFFICIENT   =   0.246

     (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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--------------------
| CHICAGO STORM    |    IDF curve parameters: A=1770.000
| Ptotal= 73.74 mm |                          B=   4.000
--------------------                          C=   0.820
                        used in:   INTENSITY =  A / (t + B)^C

                        Duration of storm  =  3.00 hrs
                        Storm time step    = 10.00 min
                        Time to peak ratio =  0.33

                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.17    5.92 |  1.00  203.31 |  1.83   10.60 |  2.67    5.65
                0.33    7.33 |  1.17   50.96 |  2.00    8.96 |  2.83    5.19
                0.50    9.77 |  1.33   25.51 |  2.17    7.78 |  3.00    4.81
                0.67   15.10 |  1.50   17.18 |  2.33    6.90 |
                0.83   38.21 |  1.67   13.06 |  2.50    6.21 |

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--------------------
| CALIB            |
| NASHYD   (  0001)|   Area     (ha)=   7.42   Curve Number   (CN)= 57.0
|ID= 1 DT= 5.0 min |   Ia       (mm)=   5.00   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.51

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.

                          ---- TRANSFORMED HYETOGRAPH ----
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
               0.083    5.92 | 0.833   38.21 | 1.583   13.06 |  2.33    6.90
               0.167    5.92 | 0.917  203.30 | 1.667   13.06 |  2.42    6.21
               0.250    7.33 | 1.000  203.31 | 1.750   10.60 |  2.50    6.21
               0.333    7.33 | 1.083   50.96 | 1.833   10.60 |  2.58    5.65
               0.417    9.77 | 1.167   50.96 | 1.917    8.96 |  2.67    5.65
               0.500    9.77 | 1.250   25.51 | 2.000    8.96 |  2.75    5.19
               0.583   15.10 | 1.333   25.51 | 2.083    7.78 |  2.83    5.19
               0.667   15.10 | 1.417   17.18 | 2.167    7.78 |  2.92    4.81
               0.750   38.21 | 1.500   17.18 | 2.250    6.90 |  3.00    4.81

     Unit Hyd Qpeak  (cms)=   0.556

     PEAK FLOW       (cms)=   0.256 (i)
     TIME TO PEAK    (hrs)=   1.583
     RUNOFF VOLUME    (mm)=  18.148
     TOTAL RAINFALL   (mm)=  73.740
     RUNOFF COEFFICIENT   =   0.246

     (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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       V    V   I    SSSSS  U   U    A    L
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

       OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
      O   O    T      T    H   H   Y Y   MM MM  O   O
      O   O    T      T    H   H    Y    M   M  O   O
       OOO     T      T    H   H    Y    M   M   OOO
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                  *****  D E T A I L E D   O U T P U T *****

  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 5.0\VO2\voin.dat
  Output  filename: C:\Users\ygollamudi\AppData\Local\Civica\VH5\bd5bfc66-6a34-
454c-8f53-cc4c6a622e78\2b552797-5e00-421d-bed7-dc771e36cfad\s
  Summary filename: C:\Users\ygollamudi\AppData\Local\Civica\VH5\bd5bfc66-6a34-
454c-8f53-cc4c6a622e78\2b552797-5e00-421d-bed7-dc771e36cfad\s

DATE: 05-08-2019                              TIME: 01:18:23

USER:

COMMENTS: _____

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  ************************************************
  ** SIMULATION : Run 02                        **
  ************************************************

--------------------
|    READ STORM    |    Filename: C:\Users\ygollamudi\AppD
|                  |              ata\Local\Temp\
|                  |              d6392a16-6ecb-4c27-8bb1-9b636cac81f0\b75b235d
| Ptotal= 89.92 mm |    Comments: scs12100
--------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.25    2.16 |  3.25    3.96 |  6.25   16.18 |  9.25    3.24
                0.50    1.80 |  3.50    3.24 |  6.50   16.18 |  9.50    2.88
                0.75    1.08 |  3.75    3.96 |  6.75    7.19 |  9.75    2.16
                1.00    2.16 |  4.00    3.24 |  7.00    7.19 | 10.00    2.88
```

1.25	1.80	4.25	6.83	7.25	5.04	10.25	2.16
1.50	2.16	4.50	6.11	7.50	5.04	10.50	1.08
1.75	1.08	4.75	6.11	7.75	6.11	10.75	2.16
2.00	2.16	5.00	6.11	8.00	5.04	11.00	1.80
2.25	3.96	5.25	11.15	8.25	3.96	11.25	2.16
2.50	2.88	5.50	11.15	8.50	3.24	11.50	1.08
2.75	4.32	5.75	80.56	8.75	3.96	11.75	1.80
3.00	2.88	6.00	81.28	9.00	2.88	12.00	2.16

```
--------------------
| CALIB            |
| NASHYD   (  0005)|   Area    (ha)=  72.56   Curve Number   (CN)= 73.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   5.00   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   1.03
```

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.16	3.083	3.96	6.083	16.18	9.08	3.24
0.167	2.16	3.167	3.96	6.167	16.18	9.17	3.24
0.250	2.16	3.250	3.96	6.250	16.18	9.25	3.24
0.333	1.80	3.333	3.24	6.333	16.18	9.33	2.88
0.417	1.80	3.417	3.24	6.417	16.18	9.42	2.88
0.500	1.80	3.500	3.24	6.500	16.18	9.50	2.88
0.583	1.08	3.583	3.96	6.583	7.19	9.58	2.16
0.667	1.08	3.667	3.96	6.667	7.19	9.67	2.16
0.750	1.08	3.750	3.96	6.750	7.19	9.75	2.16
0.833	2.16	3.833	3.24	6.833	7.19	9.83	2.88
0.917	2.16	3.917	3.24	6.917	7.19	9.92	2.88
1.000	2.16	4.000	3.24	7.000	7.19	10.00	2.88
1.083	1.80	4.083	6.83	7.083	5.04	10.08	2.16
1.167	1.80	4.167	6.83	7.167	5.04	10.17	2.16
1.250	1.80	4.250	6.83	7.250	5.04	10.25	2.16
1.333	2.16	4.333	6.11	7.333	5.04	10.33	1.08
1.417	2.16	4.417	6.11	7.417	5.04	10.42	1.08
1.500	2.16	4.500	6.11	7.500	5.04	10.50	1.08
1.583	1.08	4.583	6.11	7.583	6.11	10.58	2.16
1.667	1.08	4.667	6.11	7.667	6.11	10.67	2.16
1.750	1.08	4.750	6.11	7.750	6.11	10.75	2.16
1.833	2.16	4.833	6.11	7.833	5.04	10.83	1.80
1.917	2.16	4.917	6.11	7.917	5.04	10.92	1.80
2.000	2.16	5.000	6.11	8.000	5.04	11.00	1.80
2.083	3.96	5.083	11.15	8.083	3.96	11.08	2.16
2.167	3.96	5.167	11.15	8.167	3.96	11.17	2.16
2.250	3.96	5.250	11.15	8.250	3.96	11.25	2.16
2.333	2.88	5.333	11.15	8.333	3.24	11.33	1.08
2.417	2.88	5.417	11.15	8.417	3.24	11.42	1.08
2.500	2.88	5.500	11.15	8.500	3.24	11.50	1.08
2.583	4.32	5.583	80.56	8.583	3.96	11.58	1.80
2.667	4.32	5.667	80.56	8.667	3.96	11.67	1.80
2.750	4.32	5.750	80.56	8.750	3.96	11.75	1.80
2.833	2.88	5.833	81.28	8.833	2.88	11.83	2.16
2.917	2.88	5.917	81.28	8.917	2.88	11.92	2.16
3.000	2.88	6.000	81.28	9.000	2.88	12.00	2.16

```
Unit Hyd Qpeak  (cms)=   2.691

PEAK FLOW       (cms)=   2.673 (i)
TIME TO PEAK    (hrs)=   7.000
RUNOFF VOLUME    (mm)=  40.314
TOTAL RAINFALL   (mm)=  89.916
RUNOFF COEFFICIENT   =   0.448

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
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--------------------
|    READ STORM    |    Filename: C:\Users\ygollamudi\AppD
|                  |              ata\Local\Temp\
|                  |              d6392a16-6ecb-4c27-8bb1-9b636cac81f0\b75b235d
| Ptotal= 89.92 mm |    Comments: scs12100
--------------------
```

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	2.16	3.25	3.96	6.25	16.18	9.25	3.24
0.50	1.80	3.50	3.24	6.50	16.18	9.50	2.88
0.75	1.08	3.75	3.96	6.75	7.19	9.75	2.16
1.00	2.16	4.00	3.24	7.00	7.19	10.00	2.88
1.25	1.80	4.25	6.83	7.25	5.04	10.25	2.16
1.50	2.16	4.50	6.11	7.50	5.04	10.50	1.08
1.75	1.08	4.75	6.11	7.75	6.11	10.75	2.16
2.00	2.16	5.00	6.11	8.00	5.04	11.00	1.80
2.25	3.96	5.25	11.15	8.25	3.96	11.25	2.16
2.50	2.88	5.50	11.15	8.50	3.24	11.50	1.08
2.75	4.32	5.75	80.56	8.75	3.96	11.75	1.80
3.00	2.88	6.00	81.28	9.00	2.88	12.00	2.16

```
--------------------
| CALIB            |
| NASHYD   (  0004)|   Area    (ha)=  13.93   Curve Number   (CN)= 67.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   5.00   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.53
```

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.16	3.083	3.96	6.083	16.18	9.08	3.24
0.167	2.16	3.167	3.96	6.167	16.18	9.17	3.24
0.250	2.16	3.250	3.96	6.250	16.18	9.25	3.24
0.333	1.80	3.333	3.24	6.333	16.18	9.33	2.88
0.417	1.80	3.417	3.24	6.417	16.18	9.42	2.88
0.500	1.80	3.500	3.24	6.500	16.18	9.50	2.88
0.583	1.08	3.583	3.96	6.583	7.19	9.58	2.16
0.667	1.08	3.667	3.96	6.667	7.19	9.67	2.16
0.750	1.08	3.750	3.96	6.750	7.19	9.75	2.16
0.833	2.16	3.833	3.24	6.833	7.19	9.83	2.88
0.917	2.16	3.917	3.24	6.917	7.19	9.92	2.88
1.000	2.16	4.000	3.24	7.000	7.19	10.00	2.88
1.083	1.80	4.083	6.83	7.083	5.04	10.08	2.16
1.167	1.80	4.167	6.83	7.167	5.04	10.17	2.16
1.250	1.80	4.250	6.83	7.250	5.04	10.25	2.16

1.333	2.16	4.333	6.11	7.333	5.04	10.33	1.08
1.417	2.16	4.417	6.11	7.417	5.04	10.42	1.08
1.500	2.16	4.500	6.11	7.500	5.04	10.50	1.08
1.583	1.08	4.583	6.11	7.583	6.11	10.58	2.16
1.667	1.08	4.667	6.11	7.667	6.11	10.67	2.16
1.750	1.08	4.750	6.11	7.750	6.11	10.75	2.16
1.833	2.16	4.833	6.11	7.833	5.04	10.83	1.80
1.917	2.16	4.917	6.11	7.917	5.04	10.92	1.80
2.000	2.16	5.000	6.11	8.000	5.04	11.00	1.80
2.083	3.96	5.083	11.15	8.083	3.96	11.08	2.16
2.167	3.96	5.167	11.15	8.167	3.96	11.17	2.16
2.250	3.96	5.250	11.15	8.250	3.96	11.25	2.16
2.333	2.88	5.333	11.15	8.333	3.24	11.33	1.08
2.417	2.88	5.417	11.15	8.417	3.24	11.42	1.08
2.500	2.88	5.500	11.15	8.500	3.24	11.50	1.08
2.583	4.32	5.583	80.56	8.583	3.96	11.58	1.80
2.667	4.32	5.667	80.56	8.667	3.96	11.67	1.80
2.750	4.32	5.750	80.56	8.750	3.96	11.75	1.80
2.833	2.88	5.833	81.28	8.833	2.88	11.83	2.16
2.917	2.88	5.917	81.28	8.917	2.88	11.92	2.16
3.000	2.88	6.000	81.28	9.000	2.88	12.00	2.16

Unit Hyd Qpeak (cms)= 1.004

PEAK FLOW (cms)= 0.687 (i)
TIME TO PEAK (hrs)= 6.417
RUNOFF VOLUME (mm)= 34.332
TOTAL RAINFALL (mm)= 89.916
RUNOFF COEFFICIENT = 0.382

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

READ STORM	Filename: C:\Users\ygollamudi\AppData\Local\Temp\d6392a16-6ecb-4c27-8bb1-9b636cac81f0\b75b235d
Ptotal= 89.92 mm	Comments: scs12100

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	2.16	3.25	3.96	6.25	16.18	9.25	3.24
0.50	1.80	3.50	3.24	6.50	16.18	9.50	2.88
0.75	1.08	3.75	3.96	6.75	7.19	9.75	2.16
1.00	2.16	4.00	3.24	7.00	7.19	10.00	2.88
1.25	1.80	4.25	6.83	7.25	5.04	10.25	2.16
1.50	2.16	4.50	6.11	7.50	5.04	10.50	1.08
1.75	1.08	4.75	6.11	7.75	6.11	10.75	2.16
2.00	2.16	5.00	6.11	8.00	5.04	11.00	1.80
2.25	3.96	5.25	11.15	8.25	3.96	11.25	2.16
2.50	2.88	5.50	11.15	8.50	3.24	11.50	1.08
2.75	4.32	5.75	80.56	8.75	3.96	11.75	1.80
3.00	2.88	6.00	81.28	9.00	2.88	12.00	2.16

CALIB			
NASHYD (0003)	Area (ha)= 11.88	Curve Number (CN)= 36.0	
ID= 1 DT= 5.0 min	Ia (mm)= 5.00	# of Linear Res.(N)= 3.00	

U.H. Tp(hrs)= 0.46

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.16	3.083	3.96	6.083	16.18	9.08	3.24
0.167	2.16	3.167	3.96	6.167	16.18	9.17	3.24
0.250	2.16	3.250	3.96	6.250	16.18	9.25	3.24
0.333	1.80	3.333	3.24	6.333	16.18	9.33	2.88
0.417	1.80	3.417	3.24	6.417	16.18	9.42	2.88
0.500	1.80	3.500	3.24	6.500	16.18	9.50	2.88
0.583	1.08	3.583	3.96	6.583	7.19	9.58	2.16
0.667	1.08	3.667	3.96	6.667	7.19	9.67	2.16
0.750	1.08	3.750	3.96	6.750	7.19	9.75	2.16
0.833	2.16	3.833	3.24	6.833	7.19	9.83	2.88
0.917	2.16	3.917	3.24	6.917	7.19	9.92	2.88
1.000	2.16	4.000	3.24	7.000	7.19	10.00	2.88
1.083	1.80	4.083	6.83	7.083	5.04	10.08	2.16
1.167	1.80	4.167	6.83	7.167	5.04	10.17	2.16
1.250	1.80	4.250	6.83	7.250	5.04	10.25	2.16
1.333	2.16	4.333	6.11	7.333	5.04	10.33	1.08
1.417	2.16	4.417	6.11	7.417	5.04	10.42	1.08
1.500	2.16	4.500	6.11	7.500	5.04	10.50	1.08
1.583	1.08	4.583	6.11	7.583	6.11	10.58	2.16
1.667	1.08	4.667	6.11	7.667	6.11	10.67	2.16
1.750	1.08	4.750	6.11	7.750	6.11	10.75	2.16
1.833	2.16	4.833	6.11	7.833	5.04	10.83	1.80
1.917	2.16	4.917	6.11	7.917	5.04	10.92	1.80
2.000	2.16	5.000	6.11	8.000	5.04	11.00	1.80
2.083	3.96	5.083	11.15	8.083	3.96	11.08	2.16
2.167	3.96	5.167	11.15	8.167	3.96	11.17	2.16
2.250	3.96	5.250	11.15	8.250	3.96	11.25	2.16
2.333	2.88	5.333	11.15	8.333	3.24	11.33	1.08
2.417	2.88	5.417	11.15	8.417	3.24	11.42	1.08
2.500	2.88	5.500	11.15	8.500	3.24	11.50	1.08
2.583	4.32	5.583	80.56	8.583	3.96	11.58	1.80
2.667	4.32	5.667	80.56	8.667	3.96	11.67	1.80
2.750	4.32	5.750	80.56	8.750	3.96	11.75	1.80
2.833	2.88	5.833	81.28	8.833	2.88	11.83	2.16
2.917	2.88	5.917	81.28	8.917	2.88	11.92	2.16
3.000	2.88	6.000	81.28	9.000	2.88	12.00	2.16

Unit Hyd Qpeak (cms)= 0.986

PEAK FLOW (cms)= 0.239 (i)
TIME TO PEAK (hrs)= 6.333
RUNOFF VOLUME (mm)= 13.440
TOTAL RAINFALL (mm)= 89.916
RUNOFF COEFFICIENT = 0.149

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

READ STORM	Filename: C:\Users\ygollamudi\AppData\Local\Temp\d6392a16-6ecb-4c27-8bb1-9b636cac81f0\b75b235d

| Ptotal= 89.92 mm | Comments: scs12100

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	2.16	3.25	3.96	6.25	16.18	9.25	3.24
0.50	1.80	3.50	3.24	6.50	16.18	9.50	2.88
0.75	1.08	3.75	3.96	6.75	7.19	9.75	2.16
1.00	2.16	4.00	3.24	7.00	7.19	10.00	2.88
1.25	1.80	4.25	6.83	7.25	5.04	10.25	2.16
1.50	2.16	4.50	6.11	7.50	5.04	10.50	1.08
1.75	1.08	4.75	6.11	7.75	6.11	10.75	2.16
2.00	2.16	5.00	6.11	8.00	5.04	11.00	1.80
2.25	3.96	5.25	11.15	8.25	3.96	11.25	2.16
2.50	2.88	5.50	11.15	8.50	3.24	11.50	1.08
2.75	4.32	5.75	80.56	8.75	3.96	11.75	1.80
3.00	2.88	6.00	81.28	9.00	2.88	12.00	2.16

CALIB	
NASHYD (0002)	Area (ha)= 57.77 Curve Number (CN)= 57.0
ID= 1 DT= 5.0 min	Ia (mm)= 5.00 # of Linear Res.(N)= 3.00
	U.H. Tp(hrs)= 0.88

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.16	3.083	3.96	6.083	16.18	9.08	3.24
0.167	2.16	3.167	3.96	6.167	16.18	9.17	3.24
0.250	2.16	3.250	3.96	6.250	16.18	9.25	3.24
0.333	1.80	3.333	3.24	6.333	16.18	9.33	2.88
0.417	1.80	3.417	3.24	6.417	16.18	9.42	2.88
0.500	1.80	3.500	3.24	6.500	16.18	9.50	2.88
0.583	1.08	3.583	3.96	6.583	7.19	9.58	2.16
0.667	1.08	3.667	3.96	6.667	7.19	9.67	2.16
0.750	1.08	3.750	3.96	6.750	7.19	9.75	2.16
0.833	2.16	3.833	3.24	6.833	7.19	9.83	2.88
0.917	2.16	3.917	3.24	6.917	7.19	9.92	2.88
1.000	2.16	4.000	3.24	7.000	7.19	10.00	2.88
1.083	1.80	4.083	6.83	7.083	5.04	10.08	2.16
1.167	1.80	4.167	6.83	7.167	5.04	10.17	2.16
1.250	1.80	4.250	6.83	7.250	5.04	10.25	2.16
1.333	2.16	4.333	6.11	7.333	5.04	10.33	1.08
1.417	2.16	4.417	6.11	7.417	5.04	10.42	1.08
1.500	2.16	4.500	6.11	7.500	5.04	10.50	1.08
1.583	1.08	4.583	6.11	7.583	6.11	10.58	2.16
1.667	1.08	4.667	6.11	7.667	6.11	10.67	2.16
1.750	1.08	4.750	6.11	7.750	6.11	10.75	2.16
1.833	2.16	4.833	6.11	7.833	5.04	10.83	1.80
1.917	2.16	4.917	6.11	7.917	5.04	10.92	1.80
2.000	2.16	5.000	6.11	8.000	5.04	11.00	1.80
2.083	3.96	5.083	11.15	8.083	3.96	11.08	2.16
2.167	3.96	5.167	11.15	8.167	3.96	11.17	2.16
2.250	3.96	5.250	11.15	8.250	3.96	11.25	2.16
2.333	2.88	5.333	11.15	8.333	3.24	11.33	1.08
2.417	2.88	5.417	11.15	8.417	3.24	11.42	1.08
2.500	2.88	5.500	11.15	8.500	3.24	11.50	1.08
2.583	4.32	5.583	80.56	8.583	3.96	11.58	1.80
2.667	4.32	5.667	80.56	8.667	3.96	11.67	1.80
2.750	4.32	5.750	80.56	8.750	3.96	11.75	1.80
2.833	2.88	5.833	81.28	8.833	2.88	11.83	2.16
2.917	2.88	5.917	81.28	8.917	2.88	11.92	2.16
3.000	2.88	6.000	81.28	9.000	2.88	12.00	2.16

Unit Hyd Qpeak (cms)= 2.507

PEAK FLOW (cms)= 1.501 (i)
TIME TO PEAK (hrs)= 6.833
RUNOFF VOLUME (mm)= 26.076
TOTAL RAINFALL (mm)= 89.916
RUNOFF COEFFICIENT = 0.290

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

READ STORM	Filename: C:\Users\ygollamudi\AppData\Local\Temp\d6392a16-6ecb-4c27-8bb1-9b636cac81f0\b75b235d
Ptotal= 89.92 mm	Comments: scs12100

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	2.16	3.25	3.96	6.25	16.18	9.25	3.24
0.50	1.80	3.50	3.24	6.50	16.18	9.50	2.88
0.75	1.08	3.75	3.96	6.75	7.19	9.75	2.16
1.00	2.16	4.00	3.24	7.00	7.19	10.00	2.88
1.25	1.80	4.25	6.83	7.25	5.04	10.25	2.16
1.50	2.16	4.50	6.11	7.50	5.04	10.50	1.08
1.75	1.08	4.75	6.11	7.75	6.11	10.75	2.16
2.00	2.16	5.00	6.11	8.00	5.04	11.00	1.80
2.25	3.96	5.25	11.15	8.25	3.96	11.25	2.16
2.50	2.88	5.50	11.15	8.50	3.24	11.50	1.08
2.75	4.32	5.75	80.56	8.75	3.96	11.75	1.80
3.00	2.88	6.00	81.28	9.00	2.88	12.00	2.16

CALIB	
NASHYD (0001)	Area (ha)= 7.42 Curve Number (CN)= 57.0
ID= 1 DT= 5.0 min	Ia (mm)= 5.00 # of Linear Res.(N)= 3.00
	U.H. Tp(hrs)= 0.51

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.16	3.083	3.96	6.083	16.18	9.08	3.24
0.167	2.16	3.167	3.96	6.167	16.18	9.17	3.24
0.250	2.16	3.250	3.96	6.250	16.18	9.25	3.24
0.333	1.80	3.333	3.24	6.333	16.18	9.33	2.88
0.417	1.80	3.417	3.24	6.417	16.18	9.42	2.88
0.500	1.80	3.500	3.24	6.500	16.18	9.50	2.88
0.583	1.08	3.583	3.96	6.583	7.19	9.58	2.16

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               0.667    1.08 | 3.667    3.96 | 6.667    7.19 |  9.67    2.16
               0.750    1.08 | 3.750    3.96 | 6.750    7.19 |  9.75    2.16
               0.833    2.16 | 3.833    3.24 | 6.833    7.19 |  9.83    2.88
               0.917    2.16 | 3.917    3.24 | 6.917    7.19 |  9.92    2.88
               1.000    2.16 | 4.000    3.24 | 7.000    7.19 | 10.00    2.88
               1.083    1.80 | 4.083    6.83 | 7.083    5.04 | 10.08    2.16
               1.167    1.80 | 4.167    6.83 | 7.167    5.04 | 10.17    2.16
               1.250    1.80 | 4.250    6.83 | 7.250    5.04 | 10.25    2.16
               1.333    2.16 | 4.333    6.11 | 7.333    5.04 | 10.33    1.08
               1.417    2.16 | 4.417    6.11 | 7.417    5.04 | 10.42    1.08
               1.500    2.16 | 4.500    6.11 | 7.500    5.04 | 10.50    1.08
               1.583    1.08 | 4.583    6.11 | 7.583    6.11 | 10.58    2.16
               1.667    1.08 | 4.667    6.11 | 7.667    6.11 | 10.67    2.16
               1.750    1.08 | 4.750    6.11 | 7.750    6.11 | 10.75    2.16
               1.833    2.16 | 4.833    6.11 | 7.833    5.04 | 10.83    1.80
               1.917    2.16 | 4.917    6.11 | 7.917    5.04 | 10.92    1.80
               2.000    2.16 | 5.000    6.11 | 8.000    5.04 | 11.00    1.80
               2.083    3.96 | 5.083   11.15 | 8.083    3.96 | 11.08    2.16
               2.167    3.96 | 5.167   11.15 | 8.167    3.96 | 11.17    2.16
               2.250    3.96 | 5.250   11.15 | 8.250    3.96 | 11.25    2.16
               2.333    2.88 | 5.333   11.15 | 8.333    3.24 | 11.33    1.08
               2.417    2.88 | 5.417   11.15 | 8.417    3.24 | 11.42    1.08
               2.500    2.88 | 5.500   11.15 | 8.500    3.24 | 11.50    1.08
               2.583    4.32 | 5.583   80.56 | 8.583    3.96 | 11.58    1.80
               2.667    4.32 | 5.667   80.56 | 8.667    3.96 | 11.67    1.80
               2.750    4.32 | 5.750   80.56 | 8.750    3.96 | 11.75    1.80
               2.833    2.88 | 5.833   81.28 | 8.833    2.88 | 11.83    2.16
               2.917    2.88 | 5.917   81.28 | 8.917    2.88 | 11.92    2.16
               3.000    2.88 | 6.000   81.28 | 9.000    2.88 | 12.00    2.16

     Unit Hyd Qpeak  (cms)=   0.556

     PEAK FLOW       (cms)=   0.279 (i)
     TIME TO PEAK    (hrs)=   6.333
     RUNOFF VOLUME    (mm)=  26.074
     TOTAL RAINFALL   (mm)=  89.916
     RUNOFF COEFFICIENT   =   0.290

     (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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 FINISH
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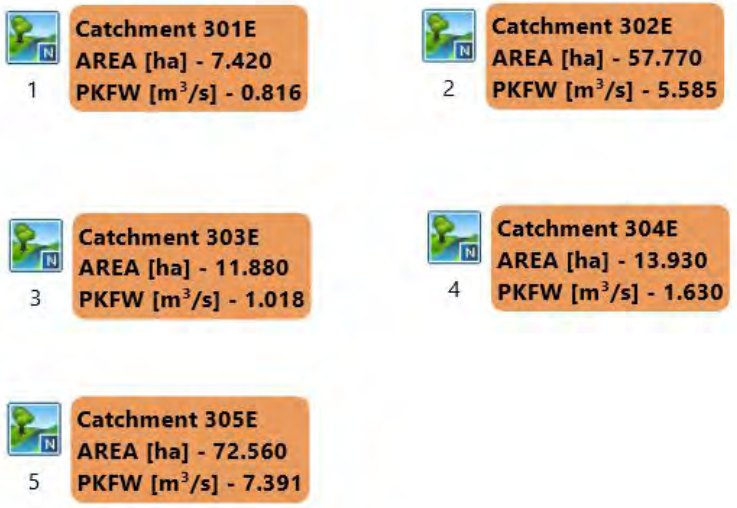

Scenario1 | Regional Flows - Final

Schematic | Regional Flows - Final - Selected Runs | Hydrograph Results (instance)

Run: Run 01 Show All Runs

Run	NHYD	DT [hr]	AREA [ha]	PKFW [m³/s]	TP [hr]	RV [mm]	DWF [m³/s]
Run 01	1	0.083	7.420	0.816	10.333	146.904	0.000
Run 01	2	0.083	57.770	5.585	11.083	146.910	0.000
Run 01	3	0.083	11.880	1.018	10.250	105.384	0.000
Run 01	4	0.083	13.930	1.630	10.333	163.069	0.000
Run 01	5	0.083	72.560	7.391	11.167	172.535	0.000

SCHAEFFERS CONSULTING ENGINEERS

Visual OTTHYMO™ Schematic

Culvert Sizing
Regional Storm

Job #: 4339 **Date: May 2019**

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       V    V   I    SSSSS  U   U    A    L
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

        OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
       O   O    T      T    H   H   Y Y   MM MM  O   O
       O   O    T      T    H   H    Y    M   M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
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                  *****  D E T A I L E D   O U T P U T *****


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454c-8f53-cc4c6a622e78\c6b9593b-f4d4-4f05-802b-45e5b1a425e7\s


DATE: 05-08-2019                          TIME: 01:21:06

USER:



COMMENTS: _____________________________________________________


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  ***********************************************
  ** SIMULATION : Run 01                       **
  ***********************************************


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|    READ STORM    |    Filename: C:\Users\ygollamudi\AppD
|                  |              ata\Local\Temp\
|                  |              78b7e4a9-680b-4168-b09c-58086c867591\9958c8f1
| Ptotal=212.00 mm |    Comments: Hazel
--------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                1.00    6.00 |  4.00   13.00 |  7.00   23.00 | 10.00   53.00
                2.00    4.00 |  5.00   17.00 |  8.00   13.00 | 11.00   38.00
                3.00    6.00 |  6.00   13.00 |  9.00   13.00 | 12.00   13.00

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| CALIB            |
| NASHYD   (  0002)|   Area    (ha)=  57.77   Curve Number    (CN)= 75.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   5.00   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.88

        NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                              ---- TRANSFORMED HYETOGRAPH ----
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
               0.083    6.00 | 3.083   13.00 | 6.083   23.00 |  9.08   53.00
               0.167    6.00 | 3.167   13.00 | 6.167   23.00 |  9.17   53.00
               0.250    6.00 | 3.250   13.00 | 6.250   23.00 |  9.25   53.00
               0.333    6.00 | 3.333   13.00 | 6.333   23.00 |  9.33   53.00
               0.417    6.00 | 3.417   13.00 | 6.417   23.00 |  9.42   53.00
               0.500    6.00 | 3.500   13.00 | 6.500   23.00 |  9.50   53.00
               0.583    6.00 | 3.583   13.00 | 6.583   23.00 |  9.58   53.00
               0.667    6.00 | 3.667   13.00 | 6.667   23.00 |  9.67   53.00
               0.750    6.00 | 3.750   13.00 | 6.750   23.00 |  9.75   53.00
               0.833    6.00 | 3.833   13.00 | 6.833   23.00 |  9.83   53.00
               0.917    6.00 | 3.917   13.00 | 6.917   23.00 |  9.92   53.00
               1.000    6.00 | 4.000   13.00 | 7.000   23.00 | 10.00   53.00
               1.083    4.00 | 4.083   17.00 | 7.083   13.00 | 10.08   38.00
               1.167    4.00 | 4.167   17.00 | 7.167   13.00 | 10.17   38.00
               1.250    4.00 | 4.250   17.00 | 7.250   13.00 | 10.25   38.00
               1.333    4.00 | 4.333   17.00 | 7.333   13.00 | 10.33   38.00
               1.417    4.00 | 4.417   17.00 | 7.417   13.00 | 10.42   38.00
               1.500    4.00 | 4.500   17.00 | 7.500   13.00 | 10.50   38.00
               1.583    4.00 | 4.583   17.00 | 7.583   13.00 | 10.58   38.00
               1.667    4.00 | 4.667   17.00 | 7.667   13.00 | 10.67   38.00
               1.750    4.00 | 4.750   17.00 | 7.750   13.00 | 10.75   38.00
               1.833    4.00 | 4.833   17.00 | 7.833   13.00 | 10.83   38.00
               1.917    4.00 | 4.917   17.00 | 7.917   13.00 | 10.92   38.00
               2.000    4.00 | 5.000   17.00 | 8.000   13.00 | 11.00   38.00
               2.083    6.00 | 5.083   13.00 | 8.083   13.00 | 11.08   13.00
               2.167    6.00 | 5.167   13.00 | 8.167   13.00 | 11.17   13.00
               2.250    6.00 | 5.250   13.00 | 8.250   13.00 | 11.25   13.00
               2.333    6.00 | 5.333   13.00 | 8.333   13.00 | 11.33   13.00
               2.417    6.00 | 5.417   13.00 | 8.417   13.00 | 11.42   13.00
               2.500    6.00 | 5.500   13.00 | 8.500   13.00 | 11.50   13.00
               2.583    6.00 | 5.583   13.00 | 8.583   13.00 | 11.58   13.00
               2.667    6.00 | 5.667   13.00 | 8.667   13.00 | 11.67   13.00
               2.750    6.00 | 5.750   13.00 | 8.750   13.00 | 11.75   13.00
               2.833    6.00 | 5.833   13.00 | 8.833   13.00 | 11.83   13.00
               2.917    6.00 | 5.917   13.00 | 8.917   13.00 | 11.92   13.00
               3.000    6.00 | 6.000   13.00 | 9.000   13.00 | 12.00   13.00

     Unit Hyd Qpeak  (cms)=   2.507

     PEAK FLOW       (cms)=   5.585 (i)
     TIME TO PEAK    (hrs)=  11.083
     RUNOFF VOLUME    (mm)= 146.910
     TOTAL RAINFALL   (mm)= 212.000
     RUNOFF COEFFICIENT   =   0.693

     (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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|    READ STORM    |    Filename: C:\Users\ygollamudi\AppD
|                  |              ata\Local\Temp\
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|                    |              78b7e4a9-680b-4168-b09c-58086c867591\9958c8f1
| Ptotal=212.00 mm |    Comments: Hazel
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TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
1.00	6.00	4.00	13.00	7.00	23.00	10.00	53.00
2.00	4.00	5.00	17.00	8.00	13.00	11.00	38.00
3.00	6.00	6.00	13.00	9.00	13.00	12.00	13.00

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| CALIB              |
| NASHYD   (  0001)|   Area     (ha)=   7.42   Curve Number    (CN)= 75.0
|ID= 1 DT= 5.0 min |   Ia       (mm)=   5.00   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.51

        NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.
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---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	6.00	3.083	13.00	6.083	23.00	9.08	53.00
0.167	6.00	3.167	13.00	6.167	23.00	9.17	53.00
0.250	6.00	3.250	13.00	6.250	23.00	9.25	53.00
0.333	6.00	3.333	13.00	6.333	23.00	9.33	53.00
0.417	6.00	3.417	13.00	6.417	23.00	9.42	53.00
0.500	6.00	3.500	13.00	6.500	23.00	9.50	53.00
0.583	6.00	3.583	13.00	6.583	23.00	9.58	53.00
0.667	6.00	3.667	13.00	6.667	23.00	9.67	53.00
0.750	6.00	3.750	13.00	6.750	23.00	9.75	53.00
0.833	6.00	3.833	13.00	6.833	23.00	9.83	53.00
0.917	6.00	3.917	13.00	6.917	23.00	9.92	53.00
1.000	6.00	4.000	13.00	7.000	23.00	10.00	53.00
1.083	4.00	4.083	17.00	7.083	13.00	10.08	38.00
1.167	4.00	4.167	17.00	7.167	13.00	10.17	38.00
1.250	4.00	4.250	17.00	7.250	13.00	10.25	38.00
1.333	4.00	4.333	17.00	7.333	13.00	10.33	38.00
1.417	4.00	4.417	17.00	7.417	13.00	10.42	38.00
1.500	4.00	4.500	17.00	7.500	13.00	10.50	38.00
1.583	4.00	4.583	17.00	7.583	13.00	10.58	38.00
1.667	4.00	4.667	17.00	7.667	13.00	10.67	38.00
1.750	4.00	4.750	17.00	7.750	13.00	10.75	38.00
1.833	4.00	4.833	17.00	7.833	13.00	10.83	38.00
1.917	4.00	4.917	17.00	7.917	13.00	10.92	38.00
2.000	4.00	5.000	17.00	8.000	13.00	11.00	38.00
2.083	6.00	5.083	13.00	8.083	13.00	11.08	13.00
2.167	6.00	5.167	13.00	8.167	13.00	11.17	13.00
2.250	6.00	5.250	13.00	8.250	13.00	11.25	13.00
2.333	6.00	5.333	13.00	8.333	13.00	11.33	13.00
2.417	6.00	5.417	13.00	8.417	13.00	11.42	13.00
2.500	6.00	5.500	13.00	8.500	13.00	11.50	13.00
2.583	6.00	5.583	13.00	8.583	13.00	11.58	13.00
2.667	6.00	5.667	13.00	8.667	13.00	11.67	13.00
2.750	6.00	5.750	13.00	8.750	13.00	11.75	13.00
2.833	6.00	5.833	13.00	8.833	13.00	11.83	13.00
2.917	6.00	5.917	13.00	8.917	13.00	11.92	13.00
3.000	6.00	6.000	13.00	9.000	13.00	12.00	13.00

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    Unit Hyd Qpeak  (cms)=   0.556

    PEAK FLOW       (cms)=   0.816 (i)
    TIME TO PEAK    (hrs)=  10.333
    RUNOFF VOLUME    (mm)= 146.904
    TOTAL RAINFALL   (mm)= 212.000
    RUNOFF COEFFICIENT   =   0.693

    (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
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|    READ STORM    |    Filename: C:\Users\ygollamudi\AppD
|                  |              ata\Local\Temp\
|                  |              78b7e4a9-680b-4168-b09c-58086c867591\9958c8f1
| Ptotal=212.00 mm |    Comments: Hazel
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TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
1.00	6.00	4.00	13.00	7.00	23.00	10.00	53.00
2.00	4.00	5.00	17.00	8.00	13.00	11.00	38.00
3.00	6.00	6.00	13.00	9.00	13.00	12.00	13.00

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| CALIB              |
| NASHYD   (  0003)|   Area     (ha)=  11.88   Curve Number    (CN)= 56.0
|ID= 1 DT= 5.0 min |   Ia       (mm)=   5.00   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.46

        NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.
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---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	6.00	3.083	13.00	6.083	23.00	9.08	53.00
0.167	6.00	3.167	13.00	6.167	23.00	9.17	53.00
0.250	6.00	3.250	13.00	6.250	23.00	9.25	53.00
0.333	6.00	3.333	13.00	6.333	23.00	9.33	53.00
0.417	6.00	3.417	13.00	6.417	23.00	9.42	53.00
0.500	6.00	3.500	13.00	6.500	23.00	9.50	53.00
0.583	6.00	3.583	13.00	6.583	23.00	9.58	53.00
0.667	6.00	3.667	13.00	6.667	23.00	9.67	53.00
0.750	6.00	3.750	13.00	6.750	23.00	9.75	53.00
0.833	6.00	3.833	13.00	6.833	23.00	9.83	53.00
0.917	6.00	3.917	13.00	6.917	23.00	9.92	53.00
1.000	6.00	4.000	13.00	7.000	23.00	10.00	53.00
1.083	4.00	4.083	17.00	7.083	13.00	10.08	38.00
1.167	4.00	4.167	17.00	7.167	13.00	10.17	38.00
1.250	4.00	4.250	17.00	7.250	13.00	10.25	38.00
1.333	4.00	4.333	17.00	7.333	13.00	10.33	38.00
1.417	4.00	4.417	17.00	7.417	13.00	10.42	38.00
1.500	4.00	4.500	17.00	7.500	13.00	10.50	38.00
1.583	4.00	4.583	17.00	7.583	13.00	10.58	38.00
1.667	4.00	4.667	17.00	7.667	13.00	10.67	38.00
1.750	4.00	4.750	17.00	7.750	13.00	10.75	38.00
1.833	4.00	4.833	17.00	7.833	13.00	10.83	38.00
1.917	4.00	4.917	17.00	7.917	13.00	10.92	38.00
2.000	4.00	5.000	17.00	8.000	13.00	11.00	38.00

2.083	6.00	5.083	13.00	8.083	13.00	11.08	13.00
2.167	6.00	5.167	13.00	8.167	13.00	11.17	13.00
2.250	6.00	5.250	13.00	8.250	13.00	11.25	13.00
2.333	6.00	5.333	13.00	8.333	13.00	11.33	13.00
2.417	6.00	5.417	13.00	8.417	13.00	11.42	13.00
2.500	6.00	5.500	13.00	8.500	13.00	11.50	13.00
2.583	6.00	5.583	13.00	8.583	13.00	11.58	13.00
2.667	6.00	5.667	13.00	8.667	13.00	11.67	13.00
2.750	6.00	5.750	13.00	8.750	13.00	11.75	13.00
2.833	6.00	5.833	13.00	8.833	13.00	11.83	13.00
2.917	6.00	5.917	13.00	8.917	13.00	11.92	13.00
3.000	6.00	6.000	13.00	9.000	13.00	12.00	13.00

Unit Hyd Qpeak (cms)= 0.986

PEAK FLOW (cms)= 1.018 (i)
TIME TO PEAK (hrs)= 10.250
RUNOFF VOLUME (mm)= 105.384
TOTAL RAINFALL (mm)= 212.000
RUNOFF COEFFICIENT = 0.497

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

READ STORM	Filename: C:\Users\ygollamudi\AppData\Local\Temp\78b7e4a9-680b-4168-b09c-58086c867591\9958c8f1
Ptotal=212.00 mm	Comments: Hazel

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
1.00	6.00	4.00	13.00	7.00	23.00	10.00	53.00
2.00	4.00	5.00	17.00	8.00	13.00	11.00	38.00
3.00	6.00	6.00	13.00	9.00	13.00	12.00	13.00

CALIB	
NASHYD (0005)	Area (ha)= 72.56 Curve Number (CN)= 86.0
ID= 1 DT= 5.0 min	Ia (mm)= 5.00 # of Linear Res.(N)= 3.00
	U.H. Tp(hrs)= 1.03

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	6.00	3.083	13.00	6.083	23.00	9.08	53.00
0.167	6.00	3.167	13.00	6.167	23.00	9.17	53.00
0.250	6.00	3.250	13.00	6.250	23.00	9.25	53.00
0.333	6.00	3.333	13.00	6.333	23.00	9.33	53.00
0.417	6.00	3.417	13.00	6.417	23.00	9.42	53.00
0.500	6.00	3.500	13.00	6.500	23.00	9.50	53.00
0.583	6.00	3.583	13.00	6.583	23.00	9.58	53.00
0.667	6.00	3.667	13.00	6.667	23.00	9.67	53.00
0.750	6.00	3.750	13.00	6.750	23.00	9.75	53.00
0.833	6.00	3.833	13.00	6.833	23.00	9.83	53.00
0.917	6.00	3.917	13.00	6.917	23.00	9.92	53.00
1.000	6.00	4.000	13.00	7.000	23.00	10.00	53.00
1.083	4.00	4.083	17.00	7.083	13.00	10.08	38.00
1.167	4.00	4.167	17.00	7.167	13.00	10.17	38.00
1.250	4.00	4.250	17.00	7.250	13.00	10.25	38.00
1.333	4.00	4.333	17.00	7.333	13.00	10.33	38.00
1.417	4.00	4.417	17.00	7.417	13.00	10.42	38.00
1.500	4.00	4.500	17.00	7.500	13.00	10.50	38.00
1.583	4.00	4.583	17.00	7.583	13.00	10.58	38.00
1.667	4.00	4.667	17.00	7.667	13.00	10.67	38.00
1.750	4.00	4.750	17.00	7.750	13.00	10.75	38.00
1.833	4.00	4.833	17.00	7.833	13.00	10.83	38.00
1.917	4.00	4.917	17.00	7.917	13.00	10.92	38.00
2.000	4.00	5.000	17.00	8.000	13.00	11.00	38.00
2.083	6.00	5.083	13.00	8.083	13.00	11.08	13.00
2.167	6.00	5.167	13.00	8.167	13.00	11.17	13.00
2.250	6.00	5.250	13.00	8.250	13.00	11.25	13.00
2.333	6.00	5.333	13.00	8.333	13.00	11.33	13.00
2.417	6.00	5.417	13.00	8.417	13.00	11.42	13.00
2.500	6.00	5.500	13.00	8.500	13.00	11.50	13.00
2.583	6.00	5.583	13.00	8.583	13.00	11.58	13.00
2.667	6.00	5.667	13.00	8.667	13.00	11.67	13.00
2.750	6.00	5.750	13.00	8.750	13.00	11.75	13.00
2.833	6.00	5.833	13.00	8.833	13.00	11.83	13.00
2.917	6.00	5.917	13.00	8.917	13.00	11.92	13.00
3.000	6.00	6.000	13.00	9.000	13.00	12.00	13.00

Unit Hyd Qpeak (cms)= 2.691

PEAK FLOW (cms)= 7.391 (i)
TIME TO PEAK (hrs)= 11.167
RUNOFF VOLUME (mm)= 172.535
TOTAL RAINFALL (mm)= 212.000
RUNOFF COEFFICIENT = 0.814

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

READ STORM	Filename: C:\Users\ygollamudi\AppData\Local\Temp\78b7e4a9-680b-4168-b09c-58086c867591\9958c8f1
Ptotal=212.00 mm	Comments: Hazel

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
1.00	6.00	4.00	13.00	7.00	23.00	10.00	53.00
2.00	4.00	5.00	17.00	8.00	13.00	11.00	38.00
3.00	6.00	6.00	13.00	9.00	13.00	12.00	13.00

CALIB	
NASHYD (0004)	Area (ha)= 13.93 Curve Number (CN)= 82.0
ID= 1 DT= 5.0 min	Ia (mm)= 5.00 # of Linear Res.(N)= 3.00
	U.H. Tp(hrs)= 0.53

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	6.00	3.083	13.00	6.083	23.00	9.08	53.00
0.167	6.00	3.167	13.00	6.167	23.00	9.17	53.00
0.250	6.00	3.250	13.00	6.250	23.00	9.25	53.00
0.333	6.00	3.333	13.00	6.333	23.00	9.33	53.00
0.417	6.00	3.417	13.00	6.417	23.00	9.42	53.00
0.500	6.00	3.500	13.00	6.500	23.00	9.50	53.00
0.583	6.00	3.583	13.00	6.583	23.00	9.58	53.00
0.667	6.00	3.667	13.00	6.667	23.00	9.67	53.00
0.750	6.00	3.750	13.00	6.750	23.00	9.75	53.00
0.833	6.00	3.833	13.00	6.833	23.00	9.83	53.00
0.917	6.00	3.917	13.00	6.917	23.00	9.92	53.00
1.000	6.00	4.000	13.00	7.000	23.00	10.00	53.00
1.083	4.00	4.083	17.00	7.083	13.00	10.08	38.00
1.167	4.00	4.167	17.00	7.167	13.00	10.17	38.00
1.250	4.00	4.250	17.00	7.250	13.00	10.25	38.00
1.333	4.00	4.333	17.00	7.333	13.00	10.33	38.00
1.417	4.00	4.417	17.00	7.417	13.00	10.42	38.00
1.500	4.00	4.500	17.00	7.500	13.00	10.50	38.00
1.583	4.00	4.583	17.00	7.583	13.00	10.58	38.00
1.667	4.00	4.667	17.00	7.667	13.00	10.67	38.00
1.750	4.00	4.750	17.00	7.750	13.00	10.75	38.00
1.833	4.00	4.833	17.00	7.833	13.00	10.83	38.00
1.917	4.00	4.917	17.00	7.917	13.00	10.92	38.00
2.000	4.00	5.000	17.00	8.000	13.00	11.00	38.00
2.083	6.00	5.083	13.00	8.083	13.00	11.08	13.00
2.167	6.00	5.167	13.00	8.167	13.00	11.17	13.00
2.250	6.00	5.250	13.00	8.250	13.00	11.25	13.00
2.333	6.00	5.333	13.00	8.333	13.00	11.33	13.00
2.417	6.00	5.417	13.00	8.417	13.00	11.42	13.00
2.500	6.00	5.500	13.00	8.500	13.00	11.50	13.00
2.583	6.00	5.583	13.00	8.583	13.00	11.58	13.00
2.667	6.00	5.667	13.00	8.667	13.00	11.67	13.00
2.750	6.00	5.750	13.00	8.750	13.00	11.75	13.00
2.833	6.00	5.833	13.00	8.833	13.00	11.83	13.00
2.917	6.00	5.917	13.00	8.917	13.00	11.92	13.00
3.000	6.00	6.000	13.00	9.000	13.00	12.00	13.00

```
     Unit Hyd Qpeak  (cms)=   1.004

     PEAK FLOW       (cms)=   1.630 (i)
     TIME TO PEAK    (hrs)=  10.333
     RUNOFF VOLUME    (mm)= 163.069
     TOTAL RAINFALL   (mm)= 212.000
     RUNOFF COEFFICIENT   =   0.769

     (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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Appendix C
Stormwater Management Calculations

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for 2-sided printing purposes

Allowable Release Rate Calculations - Kirby Road Extension

Project No.: 4339
Project Name: Kirby Road Extension
Location: City of Vaughan
Date: 2019-08-28

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Catchment	Area (ha)	Soil Type		Soil Group	Landtype	CN	Ia	TP(hr)
100	1.17	Sandy Silt to Silty Sand	BH2/BH3	AB	Woodlot	44	10	0.12
101	2.30	Sand /Sandy Silt	BH3/BH4/BH5/BH6	AB	Some woodlot/gravel pit/pasture lands	55	5	0.12
102	0.54	Sand with Traces of Silt	BH7/BH8	AB	Woodlot	44	10	0.12
103	0.61	Sand with Traces of Silt	BH11/BH12	AB	Woodlot	44	10	0.12
104	0.9885	Sand/Sandy-Silt	BH13/14	AB	Woodlot	44	10	0.12
105	2.32	Sandy Silt - Clayey Silt	BH 15/16/17/18	B	Woodlot/Grassed Area	55	10	0.12
106	1.077	Sandy Silt- Fill Clayey Silt	BH19/20	AB	Woodlot/Grassed Area	59	10	0.12

Note:
1) Minimum time of concentration of 7mins was considered for calculation
2) CN based on Table 2-2a,b,c of TR55.

Required Storage Volume

Catchment	Area	Allowable Release Rate (5-YEAR Peak Flow) (m3/s)	TIMP	XIMP	CN(Loss)	100 YR Storage Required (m3)
201	3.47	0.067	60%	60%	82	1700
202	0.54	0.009	52%	52%	82	260
203	0.61	0.010	48%	48%	82	288
204	1.14	0.016	47%	47%	82	560
205	1.62	0.057	47%	47%	86	650
206	1.63	0.030	40%	40%	82	710

Provided Storage Volumes

Catchment	Area	Required Storage (m3)	Approximate Length of the proposed sewer (m)	Super - pipe size	Provided Volume
201	3.47	1700	850	1.8	2163
202	0.54	260	120	1.8	305
203	0.61	288	130	1.8	331
204	1.14	560	250	1.8	636
205	1.62	650	270	1.8	687
206	1.63	710	210	2.1	727

Quality Control Calculations - Kirby Road Extension

Project No.: 4339
Project Name: Kirby Road Extension
Location: City of Vaughan
Date: 2019-08-28

Catchment	Area (ha)	Required Storage Volume (m3/ha)*	Required Storage Volume (m3)
201	3.47	20	69
202	0.54	20	11
203	0.61	20	12
204	1.14	20	23
205	1.62	20	32
206	1.63	20	33

Water Balance Requirements - Kirby Road Extension

Catchment	Area (ha)	Imperviousness	Required Infiltration depth(mm)	Required Infiltration Volume (m3)
201	3.47	0.60	8	166
202	0.54	0.52	8	22
203	0.61	0.48	8	23
204	1.14	0.49	8	44
205	1.62	0.46	8	60
206	1.63	0.40	8	52

Pre-development and Post development release rates - Kirby Road Extension

Project No.: 4339
Project Name: Kirby Road Extension
Location: City of Vaughan
Date: 2019-08-28

SCHAEFFERS
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Pre-development Release Rates (L/s)							
Catchment	100	101	102	103	104	105	106
2-YR	10 L/s	40 L/s	5 L/s	5 L/s	9 L/s	31 L/s	17 L/s
5-YR	19 L/s	67 L/s	9 L/s	10 L/s	16 L/s	57 L/s	30 L/s
10-YR	27 L/s	89 L/s	12 L/s	14 L/s	23 L/s	78 L/s	41 L/s
25-YR	37 L/s	119 L/s	17 L/s	19 L/s	32 L/s	107 L/s	56 L/s
50-YR	46 L/s	142 L/s	21 L/s	24 L/s	39 L/s	130 L/s	68 L/s
100-YR	56 L/s	169 L/s	26 L/s	29 L/s	47 L/s	156 L/s	82 L/s

Post-development Release Rates (m3)						
Catchment	201	202	203	204	205	206
2-YR	28 L/s	4 L/s	4 L/s	6 L/s	23 L/s	12 L/s
5-YR	38 L/s	5 L/s	5 L/s	9 L/s	32 L/s	16 L/s
10-YR	45 L/s	6 L/s	6 L/s	10 L/s	38 L/s	20 L/s
25-YR	54 L/s	7 L/s	8 L/s	13 L/s	45 L/s	24 L/s
50-YR	60 L/s	8 L/s	9 L/s	14 L/s	51 L/s	27 L/s
100-YR	67 L/s	9 L/s	10 L/s	16 L/s	57 L/s	30 L/s

Imperviousness Calculations - Kirby Road Extension

Project No.: 4339
Project Name: Kirby Road Extension
Location: City of Vaughan
Date: 2019-08-28

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Catchment	Area	Total Impervious Area	TIMP (%)	XIMP(%)
201	3.47	2.08	60%	60%
202	0.54	0.28	52%	52%
203	0.61	0.29	48%	48%
204	1.14	0.55	49%	49%
205	1.62	0.75	46%	46%
206	1.63	0.65	40%	40%
Total	**9.01**	**4.60**	**51%**	**51%**

APPENDIX N - Water Balance - Kirby Road Extension, Vaughan (Alignment 5A) **File No. 1-15-0700-54**

1. Climate Information

Precipitation	886	mm/a	0.89	m/a
Evapotranspiration	476	mm/a	0.48	m/a
Water Surplus	410	mm/a	0.41	m/a

2. Infiltration Rates

Table 2 Approach - Infiltration Factors

Hilly Land	0.1
Open Sandy Loam	0.4
Woodland	0.2
TOTAL:	0.7

Infiltration (0.7 x 410)	287	mm/a	0.287	m/a
Run-off (410 - 287)	123	mm/a	0.123	m/a

Table 3 Approach - Typical Recharge Rates

silty sand to sandy silt	150 - 200	mm/a
silt	125 - 150	mm/a
clayey silt	100 - 125	mm/a

The site development area is underlain by silty sand to sandy silt.

Based on the above, the recharge rate is	200	mm/a	0.125	m/a
with runoff of	210	mm/a	0.210	m/a

3. Property Statistics
Pre- Development Site Coverage

Area Covered by Existing Hard Surface Paving	0	m^2	0.0	ha
Area Covered by Existing Open/Grass Area	73,222	m^2	7.3	ha
TOTAL	73,222	m^2	7.3	ha

4. Post-Development Coverage

Area Covered by Hard Surface Paving	44,362	m^2	4.4	ha
Area Covered by Landscaped Area	28,860	m^2	2.9	ha
TOTAL:	73,222	m^2	7.3	ha

APPENDIX G - Water Balance - Kirby Road Extension, Vaughan (Alignment 5A) **File No. 1-15-0700-54**
Vaughan

5. Annual Water Balance Before Development

Land Use	Area (m^2)	Precipitation (m^3)	Evapotranspiration (m^3)	Evaporation (m^3)	Infiltration (m^3)	Run-Off (m^3)
Building Covered Area	0	0	nil	nil	nil	0
Hard Surface Area	0	0	nil	nil	nil	0
Open/Grass Area	73,222	64,875	34,854	nil	21,015	9,006
TOTAL	**73,222**	**64,875**	**34,854**	**0**	**21,015**	**9,006**

6. Annual Water Balance After Development

Land Use	Area (m^2)	Precipitation (m^3)	Evapotranspiration (m^3)	Evaporation (m^3)	Infiltration (m^3)	Run-Off (m^3)
Building Covered Area	0	0	nil	nil	nil	0
Hard Surface Area	44,362	39,304	nil	nil	nil	39,304
Open/Grass/Landscaped Area	28,860	25,570	13,738	nil	8,283	3,550
TOTAL	**73,222**	**64,875**	**13,738**	**0**	**8,283**	**42,854**

7. Comparison of Pre-Development and Post-Development

	Precipitation (m^3)	Evapotranspiration (m^3)	Evaporation (m^3)	Infiltration (m^3)	Run-Off (m^3)
Pre-Development	64,875	34,854	nil	21,015	9,006
Post-Development	64,875	13,738	nil	8,283	42,854

8. Requirement for Infiltration of Runoff

Volume of surface runoff required to match pre-development infiltration rates	12,732 m^3
Percentage of surface runoff required to match pre-development infiltration	32%

Water Balance Mitigation Calculations

Pre Development Infiltration =	**21,015**	**m^3/y**
Post Development Infiltration without mitigation =	**8,283**	**m^3/y**
Post to Pre Deficit =	**12,732**	**m^3/y**
Mitigation Measures		
Bioswale/Tree pits=	**12,732**	**m^3/y**
Mitgation Voulme Provided =	**12,732**	**m^3/y**
Deficit =	**0**	**m^3/y**

In order to meet the annual pre-development infiltration deficit, the mitigation methods shall provide infiltration equal to the annual deficit volume." Therefore

Area m^2
44362

4.4362ha x Annual Precipitation Depth =	12,732	m^3/year
Required Annual Precpitation Depth to meet deficit =	287	mm/yr

A precipitation analysis (rainfall & snowfall) was conducted to estimate an event with sufficient precipitation that produces an annual runoff volume of 12732 m^3/year (or a total depth of annual rainfall equal to 287 mm)

The analysis was performed on daily precipitation data collected from Richmond Hill from 1977 to 2006 by Environment Canada. The data was then arranged into four categories for each year: Total Annual Depth of Precipitation from events less than or equal to 5mm, 10mm, 15mm and 20mm. This yearly data was then used to determine an average annual precipitation depth.

Based on this analysis, it is concluded that precipitation events of depth less than or equal to 7.65 mm will produce an annual amount of precipitation equal to 288 mm/yr

The total required infiltration trench volume is = 339.37 m^3

The total area used by Terraprobe in calculations varies from Schaeffers Consulting Enginners (SCE) calculations as post-development areas includes the external area mainly slopes that drain towards the site in post-development consitions. The impervious area calculated by SCE was 4.60ha. The volume required to be infiltrated on site was calculated by using SCE values = 4.60 x 8 x 10 = 372m3

Job: 4339

Infiltration Sizing Calculations for LID Measures

May-19

Bioswale/Treepit sizing

Infiltration Volume	372.00	m^3	
Number of Lots	1		
Inillftration Volume Per lot	372.00	m^3/unit	From LID manual: Pg4-88
Drawdown Time	48	hours	
Infiltration Rate	15	mm/h	
Safety Factor	2.5		
Design Infiltration Rate	6.00	mm/h	
Required Footprint Area	1291.67	m^2	

$A_f = WQV / (d_c * V_f)$

Where:

A_f = Footprint surface area (m^2)
WQV = Water quality volume (m^3)
d_c = Bioretention cell depth (m)
V_f = Void space ratio for filter bed and gravel storage layer (assume 0.4)

Proposed Infiltration Details - Trenches

Area of the trench=	1500	m^2	Considering Approximately 900m length of bioswale/soil cells on both the sides with a width of
Total Trench Volume Provided per unit =	432.00	m^3/unit	
Minimum Required Storage Depth =	0.72	m	
Drawdown time =	48.00	hours	
Total Volume retained =	432.00	m^3	

(1500m2 x 0.72 m)

* Soils with Satutrated Hydraulic Conductivity = $1(10^{-6})$ cm/s correlates to an infiltration rate of 15mm/h
Stormwater Management Criteria (TRCA 2012)

Please note that the infiltation rate is expected to be higher due to the soil conditions on site (Sandy Silt to Silty sand)
Therefore, the depth of the gravel bed can be increased further during the detail design stage when the in-situ testing is completed.
Moreover, the depth of the Bioretention cell can include the depth of the top soil and the filter media which will further reduce the required footprint area of the bioswale.

Job: 4339

Infiltration Sizing Calculations for CWC - 201

Aug-19

Required Infiltration System Footprint Area

Inillftration Volume Per event Infiltration Vo		m^3	
drawdown time	48	hours	
infiltration rate	15	mm/h	
Safety Factor	2.5		
Design Infiltration Rate	6	mm/h	MOE Eqn 4.3
Required Footprint Area	#VALUE!	m^2	

Proposed Infiltration Details - Trenches

Dia=	450	mm		
Length=	300	m		
Width=	2	m	**(300m x 2m x 0.72m)**	
Porosity=	40	%		
Total Trench Volume Provided =	201	m^3		
Minimum Required Storage Depth =	0.72	m	Approx Depth of Infiltration System	**0.72**
Drawdown time=	48.00	hours		

Therefore the proposed system has the required footprint area to drain within 48 hours and will provide a retention volume that exceeds the required volume for mitigatior

* Soils with Satutrated Hydraulic Conductivity = $1(10^{-6})$ cm/s correlates to an infiltration rate of 15mm/h
Low Impact Development Design Manual (TRCA and CVC, 2010)

Job: 4339

Infiltration Sizing Calculations for CWC - 202/203 and 204

Aug-19

Required Infiltration System Footprint Area

Inillftration Volume Per event	46.00	m^3	
drawdown time	48	hours	
infiltration rate	15	mm/h	
Safety Factor	2.5		
Design Infiltration Rate	6	mm/h	MOE Eqn 4.3
Required Footprint Area	399	m^2	

Proposed Infiltration Details - Trenches

Dia=	450	mm		
Length=	80	m		
Width=	2	m	**(80m x 2m x 0.72m)**	
Porosity=	40	%		
Total Trench Volume Provided =	54	m^3		
Minimum Required Storage Depth =	0.72	m	Approx Depth of Infiltration System	**0.72**
Drawdown time=	48.00	hours		

Job: 4339

Infiltration Sizing Calculations for CWC -205

Aug-19

Required Infiltration System Footprint Area

Inillftration Volume Per event	60.00	m^3	
drawdown time	48	hours	
infiltration rate	15	mm/h	
Safety Factor	2.5		
Design Infiltration Rate	6	mm/h	MOE Eqn 4.3
Required Footprint Area	521	m^2	

Proposed Infiltration Details - Trenches

Dia=	450	mm		
Length=	100	m		
Width=	2	m	**(100m x 2m x 0.72m)**	
Porosity=	40	%		
Total Trench Volume Provided =	67	m^3		
Minimum Required Storage Depth =	0.72	m	Approx Depth of Infiltration System	**0.72**
Drawdown time=	48.00	hours		

Therefore the proposed system has the required footprint area to drain within 48 hours and will provide a retention volume that exceeds the required volume for mitigatior

* Soils with Satutrated Hydraulic Conductivity = $1(10^{-6})$ cm/s correlates to an infiltration rate of 15mm/h
Low Impact Development Design Manual (TRCA and CVC, 2010)

Job: 4339

Infiltration Sizing Calculations for CWC -206

Aug-19

Required Infiltration System Footprint Area

Inillftration Volume Per event	52.00	m^3	
drawdown time	48	hours	
infiltration rate	15	mm/h	
Safety Factor	2.5		
Design Infiltration Rate	6	mm/h	MOE Eqn 4.3
Required Footprint Area	451	m^2	

Proposed Infiltration Details - Trenches

Dia=	450	mm		
Length=	100	m		
Width=	2	m	**(100m x 2m x 0.72m)**	
Porosity=	40	%		
Total Trench Volume Provided =	67	m^3		
Minimum Required Storage Depth =	0.72	m	Approx Depth of Infiltration System	**0.72**
Drawdown time=	48.00	hours		

Therefore the proposed system has the required footprint area to drain within 48 hours and will provide a retention volume that exceeds the required volume for mitigatior

Schematic | Hydrograph Results (instance) ×

Run: Run 02 Show All Runs

Run	NHYD	DT [hr]	AREA [ha]	PKFW [m³/s]	TP [hr]	RV [mm]	DWF [m³/s]
Run 02	100	0.083	1.170	0.019	6.000	5.510	0.000
Run 02	101	0.083	2.300	0.067	6.000	9.696	0.000
Run 02	102	0.083	0.540	0.009	6.000	5.509	0.000
Run 02	103	0.083	0.610	0.010	6.000	5.509	0.000
Run 02	104	0.083	0.989	0.016	6.000	5.510	0.000
Run 02	105	0.083	2.320	0.057	6.000	8.022	0.000
Run 02	106	0.083	1.077	0.030	6.000	9.154	0.000

SCHAEFFERS CONSULTING ENGINEERS

Visual OTTHYMO™ Schematic

PRE-DEVELOPMENT
(SCSII DESIGN STORM)

Job #: 4339 **Date: May 2019**

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       V    V   I    SSSSS  U   U    A    L
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

        OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
       O   O    T      T    H   H   Y Y   MM MM  O   O
       O   O    T      T    H   H    Y    M   M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
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                  *****  D E T A I L E D   O U T P U T *****


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 5.0\VO2\voin.dat
  Output  filename: C:\Users\ygollamudi\AppData\Local\Civica\VH5\10c26041-43a5-
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4194-90ea-ce2e7e4124a0\39889858-066f-45ae-92f9-a6738b6850ae\s


DATE: 05-07-2019                          TIME: 09:07:47

USER:



COMMENTS: _____________________________________________________


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  ***********************************************
  ** SIMULATION : Run 01                       **
  ***********************************************


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|    READ STORM    |    Filename: C:\Users\ygollamudi\AppD
|                  |              ata\Local\Temp\
|                  |              a5c5a77e-1a97-4929-9604-cb8c0adf0517\185de9d9
| Ptotal= 42.93 mm |    Comments: 2yr
--------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.25    1.02 |  3.25    1.02 |  6.25    8.13 |  9.25    1.02
                0.50    1.02 |  3.50    2.03 |  6.50    8.13 |  9.50    2.03
                0.75    1.02 |  3.75    2.03 |  6.75    3.05 |  9.75    1.02
                1.00    0.00 |  4.00    1.02 |  7.00    3.05 | 10.00    1.02
                1.25    1.02 |  4.25    3.05 |  7.25    3.05 | 10.25    1.02
                1.50    1.02 |  4.50    3.05 |  7.50    2.03 | 10.50    1.02
                1.75    1.02 |  4.75    3.05 |  7.75    3.05 | 10.75    1.02
                2.00    1.02 |  5.00    3.05 |  8.00    2.03 | 11.00    1.02
                2.25    1.02 |  5.25    5.08 |  8.25    2.03 | 11.25    0.00
                2.50    2.03 |  5.50    5.08 |  8.50    2.03 | 11.50    1.02
                2.75    2.03 |  5.75   38.61 |  8.75    1.02 | 11.75    1.02
                3.00    2.03 |  6.00   38.61 |  9.00    2.03 | 12.00    1.02

--------------------------------------------------------------------------------

--------------------
| CALIB            |
| NASHYD   (  0104)|   Area     (ha)=   0.99   Curve Number    (CN)= 44.0
|ID= 1 DT= 5.0 min |   Ia       (mm)=  10.00   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.12

        NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                          ---- TRANSFORMED HYETOGRAPH ----
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
               0.083    1.02 | 3.083    1.02 | 6.083    8.13 |  9.08    1.02
               0.167    1.02 | 3.167    1.02 | 6.167    8.13 |  9.17    1.02
               0.250    1.02 | 3.250    1.02 | 6.250    8.13 |  9.25    1.02
               0.333    1.02 | 3.333    2.03 | 6.333    8.13 |  9.33    2.03
               0.417    1.02 | 3.417    2.03 | 6.417    8.13 |  9.42    2.03
               0.500    1.02 | 3.500    2.03 | 6.500    8.13 |  9.50    2.03
               0.583    1.02 | 3.583    2.03 | 6.583    3.05 |  9.58    1.02
               0.667    1.02 | 3.667    2.03 | 6.667    3.05 |  9.67    1.02
               0.750    1.02 | 3.750    2.03 | 6.750    3.05 |  9.75    1.02
               0.833    0.00 | 3.833    1.02 | 6.833    3.05 |  9.83    1.02
               0.917    0.00 | 3.917    1.02 | 6.917    3.05 |  9.92    1.02
               1.000    0.00 | 4.000    1.02 | 7.000    3.05 | 10.00    1.02
               1.083    1.02 | 4.083    3.05 | 7.083    3.05 | 10.08    1.02
               1.167    1.02 | 4.167    3.05 | 7.167    3.05 | 10.17    1.02
               1.250    1.02 | 4.250    3.05 | 7.250    3.05 | 10.25    1.02
               1.333    1.02 | 4.333    3.05 | 7.333    2.03 | 10.33    1.02
               1.417    1.02 | 4.417    3.05 | 7.417    2.03 | 10.42    1.02
               1.500    1.02 | 4.500    3.05 | 7.500    2.03 | 10.50    1.02
               1.583    1.02 | 4.583    3.05 | 7.583    3.05 | 10.58    1.02
               1.667    1.02 | 4.667    3.05 | 7.667    3.05 | 10.67    1.02
               1.750    1.02 | 4.750    3.05 | 7.750    3.05 | 10.75    1.02
               1.833    1.02 | 4.833    3.05 | 7.833    2.03 | 10.83    1.02
               1.917    1.02 | 4.917    3.05 | 7.917    2.03 | 10.92    1.02
               2.000    1.02 | 5.000    3.05 | 8.000    2.03 | 11.00    1.02
               2.083    1.02 | 5.083    5.08 | 8.083    2.03 | 11.08    0.00
               2.167    1.02 | 5.167    5.08 | 8.167    2.03 | 11.17    0.00
               2.250    1.02 | 5.250    5.08 | 8.250    2.03 | 11.25    0.00
               2.333    2.03 | 5.333    5.08 | 8.333    2.03 | 11.33    1.02
               2.417    2.03 | 5.417    5.08 | 8.417    2.03 | 11.42    1.02
               2.500    2.03 | 5.500    5.08 | 8.500    2.03 | 11.50    1.02
               2.583    2.03 | 5.583   38.61 | 8.583    1.02 | 11.58    1.02
               2.667    2.03 | 5.667   38.61 | 8.667    1.02 | 11.67    1.02
               2.750    2.03 | 5.750   38.61 | 8.750    1.02 | 11.75    1.02
               2.833    2.03 | 5.833   38.61 | 8.833    2.03 | 11.83    1.02
               2.917    2.03 | 5.917   38.61 | 8.917    2.03 | 11.92    1.02
               3.000    2.03 | 6.000   38.61 | 9.000    2.03 | 12.00    1.02

    Unit Hyd Qpeak  (cms)=   0.315

    PEAK FLOW       (cms)=   0.009 (i)
    TIME TO PEAK    (hrs)=   6.000
    RUNOFF VOLUME    (mm)=   3.003
    TOTAL RAINFALL   (mm)=  42.926
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     RUNOFF COEFFICIENT   =   0.070

     (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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|    READ STORM    |    Filename: C:\Users\ygollamudi\AppD
|                  |              ata\Local\Temp\
|                  |              a5c5a77e-1a97-4929-9604-cb8c0adf0517\185de9d9
| Ptotal= 42.93 mm |    Comments: 2yr
--------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.25    1.02 |  3.25    1.02 |  6.25    8.13 |  9.25    1.02
                0.50    1.02 |  3.50    2.03 |  6.50    8.13 |  9.50    2.03
                0.75    1.02 |  3.75    2.03 |  6.75    3.05 |  9.75    1.02
                1.00    0.00 |  4.00    1.02 |  7.00    3.05 | 10.00    1.02
                1.25    1.02 |  4.25    3.05 |  7.25    3.05 | 10.25    1.02
                1.50    1.02 |  4.50    3.05 |  7.50    2.03 | 10.50    1.02
                1.75    1.02 |  4.75    3.05 |  7.75    3.05 | 10.75    1.02
                2.00    1.02 |  5.00    3.05 |  8.00    2.03 | 11.00    1.02
                2.25    1.02 |  5.25    5.08 |  8.25    2.03 | 11.25    0.00
                2.50    2.03 |  5.50    5.08 |  8.50    2.03 | 11.50    1.02
                2.75    2.03 |  5.75   38.61 |  8.75    1.02 | 11.75    1.02
                3.00    2.03 |  6.00   38.61 |  9.00    2.03 | 12.00    1.02

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| CALIB            |
| NASHYD   (  0105)|   Area     (ha)=   2.32   Curve Number    (CN)= 55.0
|ID= 1 DT= 5.0 min |   Ia       (mm)=  10.00   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.12

        NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                        ---- TRANSFORMED HYETOGRAPH ----
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
               0.083    1.02 | 3.083    1.02 | 6.083    8.13 |  9.08    1.02
               0.167    1.02 | 3.167    1.02 | 6.167    8.13 |  9.17    1.02
               0.250    1.02 | 3.250    1.02 | 6.250    8.13 |  9.25    1.02
               0.333    1.02 | 3.333    2.03 | 6.333    8.13 |  9.33    2.03
               0.417    1.02 | 3.417    2.03 | 6.417    8.13 |  9.42    2.03
               0.500    1.02 | 3.500    2.03 | 6.500    8.13 |  9.50    2.03
               0.583    1.02 | 3.583    2.03 | 6.583    3.05 |  9.58    1.02
               0.667    1.02 | 3.667    2.03 | 6.667    3.05 |  9.67    1.02
               0.750    1.02 | 3.750    2.03 | 6.750    3.05 |  9.75    1.02
               0.833    0.00 | 3.833    1.02 | 6.833    3.05 |  9.83    1.02
               0.917    0.00 | 3.917    1.02 | 6.917    3.05 |  9.92    1.02
               1.000    0.00 | 4.000    1.02 | 7.000    3.05 | 10.00    1.02
               1.083    1.02 | 4.083    3.05 | 7.083    3.05 | 10.08    1.02
               1.167    1.02 | 4.167    3.05 | 7.167    3.05 | 10.17    1.02
               1.250    1.02 | 4.250    3.05 | 7.250    3.05 | 10.25    1.02
               1.333    1.02 | 4.333    3.05 | 7.333    2.03 | 10.33    1.02
               1.417    1.02 | 4.417    3.05 | 7.417    2.03 | 10.42    1.02
               1.500    1.02 | 4.500    3.05 | 7.500    2.03 | 10.50    1.02
               1.583    1.02 | 4.583    3.05 | 7.583    3.05 | 10.58    1.02
               1.667    1.02 | 4.667    3.05 | 7.667    3.05 | 10.67    1.02
               1.750    1.02 | 4.750    3.05 | 7.750    3.05 | 10.75    1.02
               1.833    1.02 | 4.833    3.05 | 7.833    2.03 | 10.83    1.02
               1.917    1.02 | 4.917    3.05 | 7.917    2.03 | 10.92    1.02
               2.000    1.02 | 5.000    3.05 | 8.000    2.03 | 11.00    1.02
               2.083    1.02 | 5.083    5.08 | 8.083    2.03 | 11.08    0.00
               2.167    1.02 | 5.167    5.08 | 8.167    2.03 | 11.17    0.00
               2.250    1.02 | 5.250    5.08 | 8.250    2.03 | 11.25    0.00
               2.333    2.03 | 5.333    5.08 | 8.333    2.03 | 11.33    1.02
               2.417    2.03 | 5.417    5.08 | 8.417    2.03 | 11.42    1.02
               2.500    2.03 | 5.500    5.08 | 8.500    2.03 | 11.50    1.02
               2.583    2.03 | 5.583   38.61 | 8.583    1.02 | 11.58    1.02
               2.667    2.03 | 5.667   38.61 | 8.667    1.02 | 11.67    1.02
               2.750    2.03 | 5.750   38.61 | 8.750    1.02 | 11.75    1.02
               2.833    2.03 | 5.833   38.61 | 8.833    2.03 | 11.83    1.02
               2.917    2.03 | 5.917   38.61 | 8.917    2.03 | 11.92    1.02
               3.000    2.03 | 6.000   38.61 | 9.000    2.03 | 12.00    1.02

     Unit Hyd Qpeak  (cms)=   0.738

     PEAK FLOW       (cms)=   0.031 (i)
     TIME TO PEAK    (hrs)=   6.000
     RUNOFF VOLUME    (mm)=   4.443
     TOTAL RAINFALL   (mm)=  42.926
     RUNOFF COEFFICIENT   =   0.104

     (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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|    READ STORM    |    Filename: C:\Users\ygollamudi\AppD
|                  |              ata\Local\Temp\
|                  |              a5c5a77e-1a97-4929-9604-cb8c0adf0517\185de9d9
| Ptotal= 42.93 mm |    Comments: 2yr
--------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.25    1.02 |  3.25    1.02 |  6.25    8.13 |  9.25    1.02
                0.50    1.02 |  3.50    2.03 |  6.50    8.13 |  9.50    2.03
                0.75    1.02 |  3.75    2.03 |  6.75    3.05 |  9.75    1.02
                1.00    0.00 |  4.00    1.02 |  7.00    3.05 | 10.00    1.02
                1.25    1.02 |  4.25    3.05 |  7.25    3.05 | 10.25    1.02
                1.50    1.02 |  4.50    3.05 |  7.50    2.03 | 10.50    1.02
                1.75    1.02 |  4.75    3.05 |  7.75    3.05 | 10.75    1.02
                2.00    1.02 |  5.00    3.05 |  8.00    2.03 | 11.00    1.02
                2.25    1.02 |  5.25    5.08 |  8.25    2.03 | 11.25    0.00
                2.50    2.03 |  5.50    5.08 |  8.50    2.03 | 11.50    1.02
                2.75    2.03 |  5.75   38.61 |  8.75    1.02 | 11.75    1.02
                3.00    2.03 |  6.00   38.61 |  9.00    2.03 | 12.00    1.02

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| CALIB            |
| NASHYD   (  0106)|   Area     (ha)=   1.08   Curve Number    (CN)= 59.0
|ID= 1 DT= 5.0 min |   Ia       (mm)=  10.00   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.12

        NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.
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---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.02	3.083	1.02	6.083	8.13	9.08	1.02
0.167	1.02	3.167	1.02	6.167	8.13	9.17	1.02
0.250	1.02	3.250	1.02	6.250	8.13	9.25	1.02
0.333	1.02	3.333	2.03	6.333	8.13	9.33	2.03
0.417	1.02	3.417	2.03	6.417	8.13	9.42	2.03
0.500	1.02	3.500	2.03	6.500	8.13	9.50	2.03
0.583	1.02	3.583	2.03	6.583	3.05	9.58	1.02
0.667	1.02	3.667	2.03	6.667	3.05	9.67	1.02
0.750	1.02	3.750	2.03	6.750	3.05	9.75	1.02
0.833	0.00	3.833	1.02	6.833	3.05	9.83	1.02
0.917	0.00	3.917	1.02	6.917	3.05	9.92	1.02
1.000	0.00	4.000	1.02	7.000	3.05	10.00	1.02
1.083	1.02	4.083	3.05	7.083	3.05	10.08	1.02
1.167	1.02	4.167	3.05	7.167	3.05	10.17	1.02
1.250	1.02	4.250	3.05	7.250	3.05	10.25	1.02
1.333	1.02	4.333	3.05	7.333	2.03	10.33	1.02
1.417	1.02	4.417	3.05	7.417	2.03	10.42	1.02
1.500	1.02	4.500	3.05	7.500	2.03	10.50	1.02
1.583	1.02	4.583	3.05	7.583	3.05	10.58	1.02
1.667	1.02	4.667	3.05	7.667	3.05	10.67	1.02
1.750	1.02	4.750	3.05	7.750	3.05	10.75	1.02
1.833	1.02	4.833	3.05	7.833	2.03	10.83	1.02
1.917	1.02	4.917	3.05	7.917	2.03	10.92	1.02
2.000	1.02	5.000	3.05	8.000	2.03	11.00	1.02
2.083	1.02	5.083	5.08	8.083	2.03	11.08	0.00
2.167	1.02	5.167	5.08	8.167	2.03	11.17	0.00
2.250	1.02	5.250	5.08	8.250	2.03	11.25	0.00
2.333	2.03	5.333	5.08	8.333	2.03	11.33	1.02
2.417	2.03	5.417	5.08	8.417	2.03	11.42	1.02
2.500	2.03	5.500	5.08	8.500	2.03	11.50	1.02
2.583	2.03	5.583	38.61	8.583	1.02	11.58	1.02
2.667	2.03	5.667	38.61	8.667	1.02	11.67	1.02
2.750	2.03	5.750	38.61	8.750	1.02	11.75	1.02
2.833	2.03	5.833	38.61	8.833	2.03	11.83	1.02
2.917	2.03	5.917	38.61	8.917	2.03	11.92	1.02
3.000	2.03	6.000	38.61	9.000	2.03	12.00	1.02

Unit Hyd Qpeak (cms)= 0.343

PEAK FLOW (cms)= 0.017 (i)
TIME TO PEAK (hrs)= 6.000
RUNOFF VOLUME (mm)= 5.107
TOTAL RAINFALL (mm)= 42.926
RUNOFF COEFFICIENT = 0.119

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

READ STORM	Filename: C:\Users\ygollamudi\AppData\Local\Temp\a5c5a77e-1a97-4929-9604-cb8c0adf0517\185de9d9
Ptotal= 42.93 mm	Comments: 2yr

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	1.02	3.25	1.02	6.25	8.13	9.25	1.02
0.50	1.02	3.50	2.03	6.50	8.13	9.50	2.03
0.75	1.02	3.75	2.03	6.75	3.05	9.75	1.02
1.00	0.00	4.00	1.02	7.00	3.05	10.00	1.02
1.25	1.02	4.25	3.05	7.25	3.05	10.25	1.02
1.50	1.02	4.50	3.05	7.50	2.03	10.50	1.02
1.75	1.02	4.75	3.05	7.75	3.05	10.75	1.02
2.00	1.02	5.00	3.05	8.00	2.03	11.00	1.02
2.25	1.02	5.25	5.08	8.25	2.03	11.25	0.00
2.50	2.03	5.50	5.08	8.50	2.03	11.50	1.02
2.75	2.03	5.75	38.61	8.75	1.02	11.75	1.02
3.00	2.03	6.00	38.61	9.00	2.03	12.00	1.02

CALIB	
NASHYD (0101) ID= 1 DT= 5.0 min	Area (ha)= 2.30 Curve Number (CN)= 55.0
	Ia (mm)= 5.00 # of Linear Res.(N)= 3.00
	U.H. Tp(hrs)= 0.12

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.02	3.083	1.02	6.083	8.13	9.08	1.02
0.167	1.02	3.167	1.02	6.167	8.13	9.17	1.02
0.250	1.02	3.250	1.02	6.250	8.13	9.25	1.02
0.333	1.02	3.333	2.03	6.333	8.13	9.33	2.03
0.417	1.02	3.417	2.03	6.417	8.13	9.42	2.03
0.500	1.02	3.500	2.03	6.500	8.13	9.50	2.03
0.583	1.02	3.583	2.03	6.583	3.05	9.58	1.02
0.667	1.02	3.667	2.03	6.667	3.05	9.67	1.02
0.750	1.02	3.750	2.03	6.750	3.05	9.75	1.02
0.833	0.00	3.833	1.02	6.833	3.05	9.83	1.02
0.917	0.00	3.917	1.02	6.917	3.05	9.92	1.02
1.000	0.00	4.000	1.02	7.000	3.05	10.00	1.02
1.083	1.02	4.083	3.05	7.083	3.05	10.08	1.02
1.167	1.02	4.167	3.05	7.167	3.05	10.17	1.02
1.250	1.02	4.250	3.05	7.250	3.05	10.25	1.02
1.333	1.02	4.333	3.05	7.333	2.03	10.33	1.02
1.417	1.02	4.417	3.05	7.417	2.03	10.42	1.02
1.500	1.02	4.500	3.05	7.500	2.03	10.50	1.02
1.583	1.02	4.583	3.05	7.583	3.05	10.58	1.02
1.667	1.02	4.667	3.05	7.667	3.05	10.67	1.02
1.750	1.02	4.750	3.05	7.750	3.05	10.75	1.02
1.833	1.02	4.833	3.05	7.833	2.03	10.83	1.02
1.917	1.02	4.917	3.05	7.917	2.03	10.92	1.02
2.000	1.02	5.000	3.05	8.000	2.03	11.00	1.02
2.083	1.02	5.083	5.08	8.083	2.03	11.08	0.00
2.167	1.02	5.167	5.08	8.167	2.03	11.17	0.00
2.250	1.02	5.250	5.08	8.250	2.03	11.25	0.00
2.333	2.03	5.333	5.08	8.333	2.03	11.33	1.02
2.417	2.03	5.417	5.08	8.417	2.03	11.42	1.02
2.500	2.03	5.500	5.08	8.500	2.03	11.50	1.02
2.583	2.03	5.583	38.61	8.583	1.02	11.58	1.02
2.667	2.03	5.667	38.61	8.667	1.02	11.67	1.02
2.750	2.03	5.750	38.61	8.750	1.02	11.75	1.02
2.833	2.03	5.833	38.61	8.833	2.03	11.83	1.02
2.917	2.03	5.917	38.61	8.917	2.03	11.92	1.02

3.000	2.03	6.000	38.61	9.000	2.03	12.00	1.02

Unit Hyd Qpeak (cms)= 0.732

PEAK FLOW (cms)= 0.040 (i)
TIME TO PEAK (hrs)= 6.000
RUNOFF VOLUME (mm)= 5.775
TOTAL RAINFALL (mm)= 42.926
RUNOFF COEFFICIENT = 0.135

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

READ STORM | Filename: C:\Users\ygollamudi\AppData\Local\Temp\a5c5a77e-1a97-4929-9604-cb8c0adf0517\185de9d9
Ptotal= 42.93 mm | Comments: 2yr

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	1.02	3.25	1.02	6.25	8.13	9.25	1.02
0.50	1.02	3.50	2.03	6.50	8.13	9.50	2.03
0.75	1.02	3.75	2.03	6.75	3.05	9.75	1.02
1.00	0.00	4.00	1.02	7.00	3.05	10.00	1.02
1.25	1.02	4.25	3.05	7.25	3.05	10.25	1.02
1.50	1.02	4.50	3.05	7.50	2.03	10.50	1.02
1.75	1.02	4.75	3.05	7.75	3.05	10.75	1.02
2.00	1.02	5.00	3.05	8.00	2.03	11.00	1.02
2.25	1.02	5.25	5.08	8.25	2.03	11.25	0.00
2.50	2.03	5.50	5.08	8.50	2.03	11.50	1.02
2.75	2.03	5.75	38.61	8.75	1.02	11.75	1.02
3.00	2.03	6.00	38.61	9.00	2.03	12.00	1.02

CALIB
NASHYD (0102) | Area (ha)= 0.54 Curve Number (CN)= 44.0
ID= 1 DT= 5.0 min | Ia (mm)= 10.00 # of Linear Res.(N)= 3.00
U.H. Tp(hrs)= 0.12

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.02	3.083	1.02	6.083	8.13	9.08	1.02
0.167	1.02	3.167	1.02	6.167	8.13	9.17	1.02
0.250	1.02	3.250	1.02	6.250	8.13	9.25	1.02
0.333	1.02	3.333	2.03	6.333	8.13	9.33	2.03
0.417	1.02	3.417	2.03	6.417	8.13	9.42	2.03
0.500	1.02	3.500	2.03	6.500	8.13	9.50	2.03
0.583	1.02	3.583	2.03	6.583	3.05	9.58	1.02
0.667	1.02	3.667	2.03	6.667	3.05	9.67	1.02
0.750	1.02	3.750	2.03	6.750	3.05	9.75	1.02
0.833	0.00	3.833	1.02	6.833	3.05	9.83	1.02
0.917	0.00	3.917	1.02	6.917	3.05	9.92	1.02
1.000	0.00	4.000	1.02	7.000	3.05	10.00	1.02
1.083	1.02	4.083	3.05	7.083	3.05	10.08	1.02
1.167	1.02	4.167	3.05	7.167	3.05	10.17	1.02
1.250	1.02	4.250	3.05	7.250	3.05	10.25	1.02
1.333	1.02	4.333	3.05	7.333	2.03	10.33	1.02
1.417	1.02	4.417	3.05	7.417	2.03	10.42	1.02
1.500	1.02	4.500	3.05	7.500	2.03	10.50	1.02
1.583	1.02	4.583	3.05	7.583	3.05	10.58	1.02
1.667	1.02	4.667	3.05	7.667	3.05	10.67	1.02
1.750	1.02	4.750	3.05	7.750	3.05	10.75	1.02
1.833	1.02	4.833	3.05	7.833	2.03	10.83	1.02
1.917	1.02	4.917	3.05	7.917	2.03	10.92	1.02
2.000	1.02	5.000	3.05	8.000	2.03	11.00	1.02
2.083	1.02	5.083	5.08	8.083	2.03	11.08	0.00
2.167	1.02	5.167	5.08	8.167	2.03	11.17	0.00
2.250	1.02	5.250	5.08	8.250	2.03	11.25	0.00
2.333	2.03	5.333	5.08	8.333	2.03	11.33	1.02
2.417	2.03	5.417	5.08	8.417	2.03	11.42	1.02
2.500	2.03	5.500	5.08	8.500	2.03	11.50	1.02
2.583	2.03	5.583	38.61	8.583	1.02	11.58	1.02
2.667	2.03	5.667	38.61	8.667	1.02	11.67	1.02
2.750	2.03	5.750	38.61	8.750	1.02	11.75	1.02
2.833	2.03	5.833	38.61	8.833	2.03	11.83	1.02
2.917	2.03	5.917	38.61	8.917	2.03	11.92	1.02
3.000	2.03	6.000	38.61	9.000	2.03	12.00	1.02

Unit Hyd Qpeak (cms)= 0.172

PEAK FLOW (cms)= 0.005 (i)
TIME TO PEAK (hrs)= 6.000
RUNOFF VOLUME (mm)= 3.003
TOTAL RAINFALL (mm)= 42.926
RUNOFF COEFFICIENT = 0.070

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

READ STORM | Filename: C:\Users\ygollamudi\AppData\Local\Temp\a5c5a77e-1a97-4929-9604-cb8c0adf0517\185de9d9
Ptotal= 42.93 mm | Comments: 2yr

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	1.02	3.25	1.02	6.25	8.13	9.25	1.02
0.50	1.02	3.50	2.03	6.50	8.13	9.50	2.03
0.75	1.02	3.75	2.03	6.75	3.05	9.75	1.02
1.00	0.00	4.00	1.02	7.00	3.05	10.00	1.02
1.25	1.02	4.25	3.05	7.25	3.05	10.25	1.02
1.50	1.02	4.50	3.05	7.50	2.03	10.50	1.02
1.75	1.02	4.75	3.05	7.75	3.05	10.75	1.02
2.00	1.02	5.00	3.05	8.00	2.03	11.00	1.02
2.25	1.02	5.25	5.08	8.25	2.03	11.25	0.00
2.50	2.03	5.50	5.08	8.50	2.03	11.50	1.02
2.75	2.03	5.75	38.61	8.75	1.02	11.75	1.02
3.00	2.03	6.00	38.61	9.00	2.03	12.00	1.02

```
| CALIB            |
| NASHYD   (  0103)|   Area    (ha)=   0.61   Curve Number    (CN)= 44.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=  10.00   # of Linear Res.(N)= 3.00
-------------------   U.H. Tp(hrs)=   0.12

        NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.
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---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.02	3.083	1.02	6.083	8.13	9.08	1.02
0.167	1.02	3.167	1.02	6.167	8.13	9.17	1.02
0.250	1.02	3.250	1.02	6.250	8.13	9.25	1.02
0.333	1.02	3.333	2.03	6.333	8.13	9.33	2.03
0.417	1.02	3.417	2.03	6.417	8.13	9.42	2.03
0.500	1.02	3.500	2.03	6.500	8.13	9.50	2.03
0.583	1.02	3.583	2.03	6.583	3.05	9.58	1.02
0.667	1.02	3.667	2.03	6.667	3.05	9.67	1.02
0.750	1.02	3.750	2.03	6.750	3.05	9.75	1.02
0.833	0.00	3.833	1.02	6.833	3.05	9.83	1.02
0.917	0.00	3.917	1.02	6.917	3.05	9.92	1.02
1.000	0.00	4.000	1.02	7.000	3.05	10.00	1.02
1.083	1.02	4.083	3.05	7.083	3.05	10.08	1.02
1.167	1.02	4.167	3.05	7.167	3.05	10.17	1.02
1.250	1.02	4.250	3.05	7.250	3.05	10.25	1.02
1.333	1.02	4.333	3.05	7.333	2.03	10.33	1.02
1.417	1.02	4.417	3.05	7.417	2.03	10.42	1.02
1.500	1.02	4.500	3.05	7.500	2.03	10.50	1.02
1.583	1.02	4.583	3.05	7.583	3.05	10.58	1.02
1.667	1.02	4.667	3.05	7.667	3.05	10.67	1.02
1.750	1.02	4.750	3.05	7.750	3.05	10.75	1.02
1.833	1.02	4.833	3.05	7.833	2.03	10.83	1.02
1.917	1.02	4.917	3.05	7.917	2.03	10.92	1.02
2.000	1.02	5.000	3.05	8.000	2.03	11.00	1.02
2.083	1.02	5.083	5.08	8.083	2.03	11.08	0.00
2.167	1.02	5.167	5.08	8.167	2.03	11.17	0.00
2.250	1.02	5.250	5.08	8.250	2.03	11.25	0.00
2.333	2.03	5.333	5.08	8.333	2.03	11.33	1.02
2.417	2.03	5.417	5.08	8.417	2.03	11.42	1.02
2.500	2.03	5.500	5.08	8.500	2.03	11.50	1.02
2.583	2.03	5.583	38.61	8.583	1.02	11.58	1.02
2.667	2.03	5.667	38.61	8.667	1.02	11.67	1.02
2.750	2.03	5.750	38.61	8.750	1.02	11.75	1.02
2.833	2.03	5.833	38.61	8.833	2.03	11.83	1.02
2.917	2.03	5.917	38.61	8.917	2.03	11.92	1.02
3.000	2.03	6.000	38.61	9.000	2.03	12.00	1.02

```
     Unit Hyd Qpeak  (cms)=   0.194

     PEAK FLOW       (cms)=   0.005 (i)
     TIME TO PEAK    (hrs)=   6.000
     RUNOFF VOLUME    (mm)=   3.003
     TOTAL RAINFALL   (mm)=  42.926
     RUNOFF COEFFICIENT   =   0.070

     (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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|    READ STORM    |    Filename: C:\Users\ygollamudi\AppD
|                  |              ata\Local\Temp\
|                  |              a5c5a77e-1a97-4929-9604-cb8c0adf0517\185de9d9
| Ptotal= 42.93 mm |    Comments: 2yr
-------------------
```

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	1.02	3.25	1.02	6.25	8.13	9.25	1.02
0.50	1.02	3.50	2.03	6.50	8.13	9.50	2.03
0.75	1.02	3.75	2.03	6.75	3.05	9.75	1.02
1.00	0.00	4.00	1.02	7.00	3.05	10.00	1.02
1.25	1.02	4.25	3.05	7.25	3.05	10.25	1.02
1.50	1.02	4.50	3.05	7.50	2.03	10.50	1.02
1.75	1.02	4.75	3.05	7.75	3.05	10.75	1.02
2.00	1.02	5.00	3.05	8.00	2.03	11.00	1.02
2.25	1.02	5.25	5.08	8.25	2.03	11.25	0.00
2.50	2.03	5.50	5.08	8.50	2.03	11.50	1.02
2.75	2.03	5.75	38.61	8.75	1.02	11.75	1.02
3.00	2.03	6.00	38.61	9.00	2.03	12.00	1.02

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| CALIB            |
| NASHYD   (  0100)|   Area    (ha)=   1.17   Curve Number    (CN)= 44.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=  10.00   # of Linear Res.(N)= 3.00
-------------------   U.H. Tp(hrs)=   0.12

        NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.
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---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.02	3.083	1.02	6.083	8.13	9.08	1.02
0.167	1.02	3.167	1.02	6.167	8.13	9.17	1.02
0.250	1.02	3.250	1.02	6.250	8.13	9.25	1.02
0.333	1.02	3.333	2.03	6.333	8.13	9.33	2.03
0.417	1.02	3.417	2.03	6.417	8.13	9.42	2.03
0.500	1.02	3.500	2.03	6.500	8.13	9.50	2.03
0.583	1.02	3.583	2.03	6.583	3.05	9.58	1.02
0.667	1.02	3.667	2.03	6.667	3.05	9.67	1.02
0.750	1.02	3.750	2.03	6.750	3.05	9.75	1.02
0.833	0.00	3.833	1.02	6.833	3.05	9.83	1.02
0.917	0.00	3.917	1.02	6.917	3.05	9.92	1.02
1.000	0.00	4.000	1.02	7.000	3.05	10.00	1.02
1.083	1.02	4.083	3.05	7.083	3.05	10.08	1.02
1.167	1.02	4.167	3.05	7.167	3.05	10.17	1.02
1.250	1.02	4.250	3.05	7.250	3.05	10.25	1.02
1.333	1.02	4.333	3.05	7.333	2.03	10.33	1.02
1.417	1.02	4.417	3.05	7.417	2.03	10.42	1.02
1.500	1.02	4.500	3.05	7.500	2.03	10.50	1.02
1.583	1.02	4.583	3.05	7.583	3.05	10.58	1.02
1.667	1.02	4.667	3.05	7.667	3.05	10.67	1.02
1.750	1.02	4.750	3.05	7.750	3.05	10.75	1.02
1.833	1.02	4.833	3.05	7.833	2.03	10.83	1.02
1.917	1.02	4.917	3.05	7.917	2.03	10.92	1.02
2.000	1.02	5.000	3.05	8.000	2.03	11.00	1.02
2.083	1.02	5.083	5.08	8.083	2.03	11.08	0.00
2.167	1.02	5.167	5.08	8.167	2.03	11.17	0.00
2.250	1.02	5.250	5.08	8.250	2.03	11.25	0.00

2.333	2.03	5.333	5.08	8.333	2.03	11.33	1.02
2.417	2.03	5.417	5.08	8.417	2.03	11.42	1.02
2.500	2.03	5.500	5.08	8.500	2.03	11.50	1.02
2.583	2.03	5.583	38.61	8.583	1.02	11.58	1.02
2.667	2.03	5.667	38.61	8.667	1.02	11.67	1.02
2.750	2.03	5.750	38.61	8.750	1.02	11.75	1.02
2.833	2.03	5.833	38.61	8.833	2.03	11.83	1.02
2.917	2.03	5.917	38.61	8.917	2.03	11.92	1.02
3.000	2.03	6.000	38.61	9.000	2.03	12.00	1.02

Unit Hyd Qpeak (cms)= 0.372

PEAK FLOW (cms)= 0.010 (i)
TIME TO PEAK (hrs)= 6.000
RUNOFF VOLUME (mm)= 3.003
TOTAL RAINFALL (mm)= 42.926
RUNOFF COEFFICIENT = 0.070

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

```
       V    V   I    SSSSS  U   U    A    L
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

        OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
       O   O    T      T    H   H   Y Y   MM MM  O   O
       O   O    T      T    H   H    Y    M   M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
```

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***** D E T A I L E D O U T P U T *****

Input filename: C:\Program Files (x86)\Visual OTTHYMO 5.0\VO2\voin.dat
Output filename: C:\Users\ygollamudi\AppData\Local\Civica\VH5\10c26041-43a5-4194-90ea-ce2e7e4124a0\7c3a858d-9f84-4150-8c4b-26c3e2536240\s
Summary filename: C:\Users\ygollamudi\AppData\Local\Civica\VH5\10c26041-43a5-4194-90ea-ce2e7e4124a0\7c3a858d-9f84-4150-8c4b-26c3e2536240\s

DATE: 05-07-2019 TIME: 09:07:47

USER:

COMMENTS: _____

** SIMULATION : Run 02 **

READ STORM	Filename: C:\Users\ygollamudi\AppData\Local\Temp\a5c5a77e-1a97-4929-9604-cb8c0adf0517\bfafd6f8
Ptotal= 55.37 mm	Comments: 5yr

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	1.02	3.25	3.05	6.25	9.14	9.25	1.02
0.50	1.02	3.50	2.03	6.50	10.16	9.50	2.03
0.75	1.02	3.75	2.03	6.75	5.08	9.75	2.03
1.00	1.02	4.00	2.03	7.00	4.06	10.00	1.02
1.25	1.02	4.25	4.06	7.25	3.05	10.25	1.02
1.50	2.03	4.50	4.06	7.50	3.05	10.50	1.02
1.75	1.02	4.75	4.06	7.75	4.06	10.75	2.03
2.00	1.02	5.00	3.05	8.00	3.05	11.00	1.02
2.25	2.03	5.25	7.11	8.25	2.03	11.25	1.02
2.50	2.03	5.50	7.11	8.50	2.03	11.50	1.02
2.75	2.03	5.75	49.78	8.75	3.05	11.75	1.02
3.00	2.03	6.00	49.78	9.00	2.03	12.00	1.02

CALIB	
NASHYD (0104)	Area (ha)= 0.99 Curve Number (CN)= 44.0
ID= 1 DT= 5.0 min	Ia (mm)= 10.00 # of Linear Res.(N)= 3.00
	U.H. Tp(hrs)= 0.12

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.02	3.083	3.05	6.083	9.14	9.08	1.02
0.167	1.02	3.167	3.05	6.167	9.14	9.17	1.02
0.250	1.02	3.250	3.05	6.250	9.14	9.25	1.02
0.333	1.02	3.333	2.03	6.333	10.16	9.33	2.03
0.417	1.02	3.417	2.03	6.417	10.16	9.42	2.03
0.500	1.02	3.500	2.03	6.500	10.16	9.50	2.03
0.583	1.02	3.583	2.03	6.583	5.08	9.58	2.03
0.667	1.02	3.667	2.03	6.667	5.08	9.67	2.03
0.750	1.02	3.750	2.03	6.750	5.08	9.75	2.03
0.833	1.02	3.833	2.03	6.833	4.06	9.83	1.02
0.917	1.02	3.917	2.03	6.917	4.06	9.92	1.02
1.000	1.02	4.000	2.03	7.000	4.06	10.00	1.02
1.083	1.02	4.083	4.06	7.083	3.05	10.08	1.02
1.167	1.02	4.167	4.06	7.167	3.05	10.17	1.02
1.250	1.02	4.250	4.06	7.250	3.05	10.25	1.02
1.333	2.03	4.333	4.06	7.333	3.05	10.33	1.02
1.417	2.03	4.417	4.06	7.417	3.05	10.42	1.02
1.500	2.03	4.500	4.06	7.500	3.05	10.50	1.02
1.583	1.02	4.583	4.06	7.583	4.06	10.58	2.03
1.667	1.02	4.667	4.06	7.667	4.06	10.67	2.03
1.750	1.02	4.750	4.06	7.750	4.06	10.75	2.03
1.833	1.02	4.833	3.05	7.833	3.05	10.83	1.02

1.917	1.02	4.917	3.05	7.917	3.05	10.92	1.02
2.000	1.02	5.000	3.05	8.000	3.05	11.00	1.02
2.083	2.03	5.083	7.11	8.083	2.03	11.08	1.02
2.167	2.03	5.167	7.11	8.167	2.03	11.17	1.02
2.250	2.03	5.250	7.11	8.250	2.03	11.25	1.02
2.333	2.03	5.333	7.11	8.333	2.03	11.33	1.02
2.417	2.03	5.417	7.11	8.417	2.03	11.42	1.02
2.500	2.03	5.500	7.11	8.500	2.03	11.50	1.02
2.583	2.03	5.583	49.78	8.583	3.05	11.58	1.02
2.667	2.03	5.667	49.78	8.667	3.05	11.67	1.02
2.750	2.03	5.750	49.78	8.750	3.05	11.75	1.02
2.833	2.03	5.833	49.78	8.833	2.03	11.83	1.02
2.917	2.03	5.917	49.78	8.917	2.03	11.92	1.02
3.000	2.03	6.000	49.78	9.000	2.03	12.00	1.02

Unit Hyd Qpeak (cms)= 0.315

PEAK FLOW (cms)= 0.016 (i)
TIME TO PEAK (hrs)= 6.000
RUNOFF VOLUME (mm)= 5.510
TOTAL RAINFALL (mm)= 55.372
RUNOFF COEFFICIENT = 0.100

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

READ STORM | Filename: C:\Users\ygollamudi\AppData\Local\Temp\a5c5a77e-1a97-4929-9604-cb8c0adf0517\bfafd6f8
Ptotal= 55.37 mm | Comments: 5yr

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	1.02	3.25	3.05	6.25	9.14	9.25	1.02
0.50	1.02	3.50	2.03	6.50	10.16	9.50	2.03
0.75	1.02	3.75	2.03	6.75	5.08	9.75	2.03
1.00	1.02	4.00	2.03	7.00	4.06	10.00	1.02
1.25	1.02	4.25	4.06	7.25	3.05	10.25	1.02
1.50	2.03	4.50	4.06	7.50	3.05	10.50	1.02
1.75	1.02	4.75	4.06	7.75	4.06	10.75	2.03
2.00	1.02	5.00	3.05	8.00	3.05	11.00	1.02
2.25	2.03	5.25	7.11	8.25	2.03	11.25	1.02
2.50	2.03	5.50	7.11	8.50	2.03	11.50	1.02
2.75	2.03	5.75	49.78	8.75	3.05	11.75	1.02
3.00	2.03	6.00	49.78	9.00	2.03	12.00	1.02

CALIB | NASHYD (0105) | ID= 1 DT= 5.0 min | Area (ha)= 2.32 | Curve Number (CN)= 55.0 | Ia (mm)= 10.00 | # of Linear Res.(N)= 3.00 | U.H. Tp(hrs)= 0.12

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.02	3.083	3.05	6.083	9.14	9.08	1.02
0.167	1.02	3.167	3.05	6.167	9.14	9.17	1.02
0.250	1.02	3.250	3.05	6.250	9.14	9.25	1.02
0.333	1.02	3.333	2.03	6.333	10.16	9.33	2.03
0.417	1.02	3.417	2.03	6.417	10.16	9.42	2.03
0.500	1.02	3.500	2.03	6.500	10.16	9.50	2.03
0.583	1.02	3.583	2.03	6.583	5.08	9.58	2.03
0.667	1.02	3.667	2.03	6.667	5.08	9.67	2.03
0.750	1.02	3.750	2.03	6.750	5.08	9.75	2.03
0.833	1.02	3.833	2.03	6.833	4.06	9.83	1.02
0.917	1.02	3.917	2.03	6.917	4.06	9.92	1.02
1.000	1.02	4.000	2.03	7.000	4.06	10.00	1.02
1.083	1.02	4.083	4.06	7.083	3.05	10.08	1.02
1.167	1.02	4.167	4.06	7.167	3.05	10.17	1.02
1.250	1.02	4.250	4.06	7.250	3.05	10.25	1.02
1.333	2.03	4.333	4.06	7.333	3.05	10.33	1.02
1.417	2.03	4.417	4.06	7.417	3.05	10.42	1.02
1.500	2.03	4.500	4.06	7.500	3.05	10.50	1.02
1.583	1.02	4.583	4.06	7.583	4.06	10.58	2.03
1.667	1.02	4.667	4.06	7.667	4.06	10.67	2.03
1.750	1.02	4.750	4.06	7.750	4.06	10.75	2.03
1.833	1.02	4.833	3.05	7.833	3.05	10.83	1.02
1.917	1.02	4.917	3.05	7.917	3.05	10.92	1.02
2.000	1.02	5.000	3.05	8.000	3.05	11.00	1.02
2.083	2.03	5.083	7.11	8.083	2.03	11.08	1.02
2.167	2.03	5.167	7.11	8.167	2.03	11.17	1.02
2.250	2.03	5.250	7.11	8.250	2.03	11.25	1.02
2.333	2.03	5.333	7.11	8.333	2.03	11.33	1.02
2.417	2.03	5.417	7.11	8.417	2.03	11.42	1.02
2.500	2.03	5.500	7.11	8.500	2.03	11.50	1.02
2.583	2.03	5.583	49.78	8.583	3.05	11.58	1.02
2.667	2.03	5.667	49.78	8.667	3.05	11.67	1.02
2.750	2.03	5.750	49.78	8.750	3.05	11.75	1.02
2.833	2.03	5.833	49.78	8.833	2.03	11.83	1.02
2.917	2.03	5.917	49.78	8.917	2.03	11.92	1.02
3.000	2.03	6.000	49.78	9.000	2.03	12.00	1.02

Unit Hyd Qpeak (cms)= 0.738

PEAK FLOW (cms)= 0.057 (i)
TIME TO PEAK (hrs)= 6.000
RUNOFF VOLUME (mm)= 8.022
TOTAL RAINFALL (mm)= 55.372
RUNOFF COEFFICIENT = 0.145

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

READ STORM | Filename: C:\Users\ygollamudi\AppData\Local\Temp\a5c5a77e-1a97-4929-9604-cb8c0adf0517\bfafd6f8
Ptotal= 55.37 mm | Comments: 5yr

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	1.02	3.25	3.05	6.25	9.14	9.25	1.02
0.50	1.02	3.50	2.03	6.50	10.16	9.50	2.03
0.75	1.02	3.75	2.03	6.75	5.08	9.75	2.03

1.00	1.02	4.00	2.03	7.00	4.06	10.00	1.02
1.25	1.02	4.25	4.06	7.25	3.05	10.25	1.02
1.50	2.03	4.50	4.06	7.50	3.05	10.50	1.02
1.75	1.02	4.75	4.06	7.75	4.06	10.75	2.03
2.00	1.02	5.00	3.05	8.00	3.05	11.00	1.02
2.25	2.03	5.25	7.11	8.25	2.03	11.25	1.02
2.50	2.03	5.50	7.11	8.50	2.03	11.50	1.02
2.75	2.03	5.75	49.78	8.75	3.05	11.75	1.02
3.00	2.03	6.00	49.78	9.00	2.03	12.00	1.02

CALIB				
NASHYD (0106)	Area (ha)= 1.08	Curve Number (CN)= 59.0		
ID= 1 DT= 5.0 min	Ia (mm)= 10.00	# of Linear Res.(N)= 3.00		
	U.H. Tp(hrs)= 0.12			

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.02	3.083	3.05	6.083	9.14	9.08	1.02
0.167	1.02	3.167	3.05	6.167	9.14	9.17	1.02
0.250	1.02	3.250	3.05	6.250	9.14	9.25	1.02
0.333	1.02	3.333	2.03	6.333	10.16	9.33	2.03
0.417	1.02	3.417	2.03	6.417	10.16	9.42	2.03
0.500	1.02	3.500	2.03	6.500	10.16	9.50	2.03
0.583	1.02	3.583	2.03	6.583	5.08	9.58	2.03
0.667	1.02	3.667	2.03	6.667	5.08	9.67	2.03
0.750	1.02	3.750	2.03	6.750	5.08	9.75	2.03
0.833	1.02	3.833	2.03	6.833	4.06	9.83	1.02
0.917	1.02	3.917	2.03	6.917	4.06	9.92	1.02
1.000	1.02	4.000	2.03	7.000	4.06	10.00	1.02
1.083	1.02	4.083	4.06	7.083	3.05	10.08	1.02
1.167	1.02	4.167	4.06	7.167	3.05	10.17	1.02
1.250	1.02	4.250	4.06	7.250	3.05	10.25	1.02
1.333	2.03	4.333	4.06	7.333	3.05	10.33	1.02
1.417	2.03	4.417	4.06	7.417	3.05	10.42	1.02
1.500	2.03	4.500	4.06	7.500	3.05	10.50	1.02
1.583	1.02	4.583	4.06	7.583	4.06	10.58	2.03
1.667	1.02	4.667	4.06	7.667	4.06	10.67	2.03
1.750	1.02	4.750	4.06	7.750	4.06	10.75	2.03
1.833	1.02	4.833	3.05	7.833	3.05	10.83	1.02
1.917	1.02	4.917	3.05	7.917	3.05	10.92	1.02
2.000	1.02	5.000	3.05	8.000	3.05	11.00	1.02
2.083	2.03	5.083	7.11	8.083	2.03	11.08	1.02
2.167	2.03	5.167	7.11	8.167	2.03	11.17	1.02
2.250	2.03	5.250	7.11	8.250	2.03	11.25	1.02
2.333	2.03	5.333	7.11	8.333	2.03	11.33	1.02
2.417	2.03	5.417	7.11	8.417	2.03	11.42	1.02
2.500	2.03	5.500	7.11	8.500	2.03	11.50	1.02
2.583	2.03	5.583	49.78	8.583	3.05	11.58	1.02
2.667	2.03	5.667	49.78	8.667	3.05	11.67	1.02
2.750	2.03	5.750	49.78	8.750	3.05	11.75	1.02
2.833	2.03	5.833	49.78	8.833	2.03	11.83	1.02
2.917	2.03	5.917	49.78	8.917	2.03	11.92	1.02
3.000	2.03	6.000	49.78	9.000	2.03	12.00	1.02

Unit Hyd Qpeak (cms)= 0.343

PEAK FLOW (cms)= 0.030 (i)
TIME TO PEAK (hrs)= 6.000
RUNOFF VOLUME (mm)= 9.154
TOTAL RAINFALL (mm)= 55.372
RUNOFF COEFFICIENT = 0.165

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

READ STORM	Filename: C:\Users\ygollamudi\AppData\Local\Temp\a5c5a77e-1a97-4929-9604-cb8c0adf0517\bfafd6f8
Ptotal= 55.37 mm	Comments: 5yr

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	1.02	3.25	3.05	6.25	9.14	9.25	1.02
0.50	1.02	3.50	2.03	6.50	10.16	9.50	2.03
0.75	1.02	3.75	2.03	6.75	5.08	9.75	2.03
1.00	1.02	4.00	2.03	7.00	4.06	10.00	1.02
1.25	1.02	4.25	4.06	7.25	3.05	10.25	1.02
1.50	2.03	4.50	4.06	7.50	3.05	10.50	1.02
1.75	1.02	4.75	4.06	7.75	4.06	10.75	2.03
2.00	1.02	5.00	3.05	8.00	3.05	11.00	1.02
2.25	2.03	5.25	7.11	8.25	2.03	11.25	1.02
2.50	2.03	5.50	7.11	8.50	2.03	11.50	1.02
2.75	2.03	5.75	49.78	8.75	3.05	11.75	1.02
3.00	2.03	6.00	49.78	9.00	2.03	12.00	1.02

CALIB				
NASHYD (0101)	Area (ha)= 2.30	Curve Number (CN)= 55.0		
ID= 1 DT= 5.0 min	Ia (mm)= 5.00	# of Linear Res.(N)= 3.00		
	U.H. Tp(hrs)= 0.12			

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.02	3.083	3.05	6.083	9.14	9.08	1.02
0.167	1.02	3.167	3.05	6.167	9.14	9.17	1.02
0.250	1.02	3.250	3.05	6.250	9.14	9.25	1.02
0.333	1.02	3.333	2.03	6.333	10.16	9.33	2.03
0.417	1.02	3.417	2.03	6.417	10.16	9.42	2.03
0.500	1.02	3.500	2.03	6.500	10.16	9.50	2.03
0.583	1.02	3.583	2.03	6.583	5.08	9.58	2.03
0.667	1.02	3.667	2.03	6.667	5.08	9.67	2.03
0.750	1.02	3.750	2.03	6.750	5.08	9.75	2.03
0.833	1.02	3.833	2.03	6.833	4.06	9.83	1.02
0.917	1.02	3.917	2.03	6.917	4.06	9.92	1.02
1.000	1.02	4.000	2.03	7.000	4.06	10.00	1.02
1.083	1.02	4.083	4.06	7.083	3.05	10.08	1.02
1.167	1.02	4.167	4.06	7.167	3.05	10.17	1.02

1.250	1.02	4.250	4.06	7.250	3.05	10.25	1.02
1.333	2.03	4.333	4.06	7.333	3.05	10.33	1.02
1.417	2.03	4.417	4.06	7.417	3.05	10.42	1.02
1.500	2.03	4.500	4.06	7.500	3.05	10.50	1.02
1.583	1.02	4.583	4.06	7.583	4.06	10.58	2.03
1.667	1.02	4.667	4.06	7.667	4.06	10.67	2.03
1.750	1.02	4.750	4.06	7.750	4.06	10.75	2.03
1.833	1.02	4.833	3.05	7.833	3.05	10.83	1.02
1.917	1.02	4.917	3.05	7.917	3.05	10.92	1.02
2.000	1.02	5.000	3.05	8.000	3.05	11.00	1.02
2.083	2.03	5.083	7.11	8.083	2.03	11.08	1.02
2.167	2.03	5.167	7.11	8.167	2.03	11.17	1.02
2.250	2.03	5.250	7.11	8.250	2.03	11.25	1.02
2.333	2.03	5.333	7.11	8.333	2.03	11.33	1.02
2.417	2.03	5.417	7.11	8.417	2.03	11.42	1.02
2.500	2.03	5.500	7.11	8.500	2.03	11.50	1.02
2.583	2.03	5.583	49.78	8.583	3.05	11.58	1.02
2.667	2.03	5.667	49.78	8.667	3.05	11.67	1.02
2.750	2.03	5.750	49.78	8.750	3.05	11.75	1.02
2.833	2.03	5.833	49.78	8.833	2.03	11.83	1.02
2.917	2.03	5.917	49.78	8.917	2.03	11.92	1.02
3.000	2.03	6.000	49.78	9.000	2.03	12.00	1.02

Unit Hyd Qpeak (cms)= 0.732

PEAK FLOW (cms)= 0.067 (i)
TIME TO PEAK (hrs)= 6.000
RUNOFF VOLUME (mm)= 9.696
TOTAL RAINFALL (mm)= 55.372
RUNOFF COEFFICIENT = 0.175

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

READ STORM	Filename: C:\Users\ygollamudi\AppData\Local\Temp\a5c5a77e-1a97-4929-9604-cb8c0adf0517\bfafd6f8
Ptotal= 55.37 mm	Comments: 5yr

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	1.02	3.25	3.05	6.25	9.14	9.25	1.02
0.50	1.02	3.50	2.03	6.50	10.16	9.50	2.03
0.75	1.02	3.75	2.03	6.75	5.08	9.75	2.03
1.00	1.02	4.00	2.03	7.00	4.06	10.00	1.02
1.25	1.02	4.25	4.06	7.25	3.05	10.25	1.02
1.50	2.03	4.50	4.06	7.50	3.05	10.50	1.02
1.75	1.02	4.75	4.06	7.75	4.06	10.75	2.03
2.00	1.02	5.00	3.05	8.00	3.05	11.00	1.02
2.25	2.03	5.25	7.11	8.25	2.03	11.25	1.02
2.50	2.03	5.50	7.11	8.50	2.03	11.50	1.02
2.75	2.03	5.75	49.78	8.75	3.05	11.75	1.02
3.00	2.03	6.00	49.78	9.00	2.03	12.00	1.02

CALIB NASHYD (0102)	Area (ha)= 0.54	Curve Number (CN)= 44.0

ID= 1 DT= 5.0 min	Ia (mm)= 10.00 # of Linear Res.(N)= 3.00
U.H. Tp(hrs)= 0.12

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.02	3.083	3.05	6.083	9.14	9.08	1.02
0.167	1.02	3.167	3.05	6.167	9.14	9.17	1.02
0.250	1.02	3.250	3.05	6.250	9.14	9.25	1.02
0.333	1.02	3.333	2.03	6.333	10.16	9.33	2.03
0.417	1.02	3.417	2.03	6.417	10.16	9.42	2.03
0.500	1.02	3.500	2.03	6.500	10.16	9.50	2.03
0.583	1.02	3.583	2.03	6.583	5.08	9.58	2.03
0.667	1.02	3.667	2.03	6.667	5.08	9.67	2.03
0.750	1.02	3.750	2.03	6.750	5.08	9.75	2.03
0.833	1.02	3.833	2.03	6.833	4.06	9.83	1.02
0.917	1.02	3.917	2.03	6.917	4.06	9.92	1.02
1.000	1.02	4.000	2.03	7.000	4.06	10.00	1.02
1.083	1.02	4.083	4.06	7.083	3.05	10.08	1.02
1.167	1.02	4.167	4.06	7.167	3.05	10.17	1.02
1.250	1.02	4.250	4.06	7.250	3.05	10.25	1.02
1.333	2.03	4.333	4.06	7.333	3.05	10.33	1.02
1.417	2.03	4.417	4.06	7.417	3.05	10.42	1.02
1.500	2.03	4.500	4.06	7.500	3.05	10.50	1.02
1.583	1.02	4.583	4.06	7.583	4.06	10.58	2.03
1.667	1.02	4.667	4.06	7.667	4.06	10.67	2.03
1.750	1.02	4.750	4.06	7.750	4.06	10.75	2.03
1.833	1.02	4.833	3.05	7.833	3.05	10.83	1.02
1.917	1.02	4.917	3.05	7.917	3.05	10.92	1.02
2.000	1.02	5.000	3.05	8.000	3.05	11.00	1.02
2.083	2.03	5.083	7.11	8.083	2.03	11.08	1.02
2.167	2.03	5.167	7.11	8.167	2.03	11.17	1.02
2.250	2.03	5.250	7.11	8.250	2.03	11.25	1.02
2.333	2.03	5.333	7.11	8.333	2.03	11.33	1.02
2.417	2.03	5.417	7.11	8.417	2.03	11.42	1.02
2.500	2.03	5.500	7.11	8.500	2.03	11.50	1.02
2.583	2.03	5.583	49.78	8.583	3.05	11.58	1.02
2.667	2.03	5.667	49.78	8.667	3.05	11.67	1.02
2.750	2.03	5.750	49.78	8.750	3.05	11.75	1.02
2.833	2.03	5.833	49.78	8.833	2.03	11.83	1.02
2.917	2.03	5.917	49.78	8.917	2.03	11.92	1.02
3.000	2.03	6.000	49.78	9.000	2.03	12.00	1.02

Unit Hyd Qpeak (cms)= 0.172

PEAK FLOW (cms)= 0.009 (i)
TIME TO PEAK (hrs)= 6.000
RUNOFF VOLUME (mm)= 5.509
TOTAL RAINFALL (mm)= 55.372
RUNOFF COEFFICIENT = 0.099

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

READ STORM	Filename: C:\Users\ygollamudi\AppData\Local\Temp\

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|                   |              a5c5a77e-1a97-4929-9604-cb8c0adf0517\bfafd6f8
| Ptotal= 55.37 mm |    Comments: 5yr
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TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	1.02	3.25	3.05	6.25	9.14	9.25	1.02
0.50	1.02	3.50	2.03	6.50	10.16	9.50	2.03
0.75	1.02	3.75	2.03	6.75	5.08	9.75	2.03
1.00	1.02	4.00	2.03	7.00	4.06	10.00	1.02
1.25	1.02	4.25	4.06	7.25	3.05	10.25	1.02
1.50	2.03	4.50	4.06	7.50	3.05	10.50	1.02
1.75	1.02	4.75	4.06	7.75	4.06	10.75	2.03
2.00	1.02	5.00	3.05	8.00	3.05	11.00	1.02
2.25	2.03	5.25	7.11	8.25	2.03	11.25	1.02
2.50	2.03	5.50	7.11	8.50	2.03	11.50	1.02
2.75	2.03	5.75	49.78	8.75	3.05	11.75	1.02
3.00	2.03	6.00	49.78	9.00	2.03	12.00	1.02

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| CALIB             |
| NASHYD   (  0103)|   Area     (ha)=   0.61   Curve Number    (CN)= 44.0
|ID= 1 DT= 5.0 min |   Ia       (mm)=  10.00   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.12

        NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.
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---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.02	3.083	3.05	6.083	9.14	9.08	1.02
0.167	1.02	3.167	3.05	6.167	9.14	9.17	1.02
0.250	1.02	3.250	3.05	6.250	9.14	9.25	1.02
0.333	1.02	3.333	2.03	6.333	10.16	9.33	2.03
0.417	1.02	3.417	2.03	6.417	10.16	9.42	2.03
0.500	1.02	3.500	2.03	6.500	10.16	9.50	2.03
0.583	1.02	3.583	2.03	6.583	5.08	9.58	2.03
0.667	1.02	3.667	2.03	6.667	5.08	9.67	2.03
0.750	1.02	3.750	2.03	6.750	5.08	9.75	2.03
0.833	1.02	3.833	2.03	6.833	4.06	9.83	1.02
0.917	1.02	3.917	2.03	6.917	4.06	9.92	1.02
1.000	1.02	4.000	2.03	7.000	4.06	10.00	1.02
1.083	1.02	4.083	4.06	7.083	3.05	10.08	1.02
1.167	1.02	4.167	4.06	7.167	3.05	10.17	1.02
1.250	1.02	4.250	4.06	7.250	3.05	10.25	1.02
1.333	2.03	4.333	4.06	7.333	3.05	10.33	1.02
1.417	2.03	4.417	4.06	7.417	3.05	10.42	1.02
1.500	2.03	4.500	4.06	7.500	3.05	10.50	1.02
1.583	1.02	4.583	4.06	7.583	4.06	10.58	2.03
1.667	1.02	4.667	4.06	7.667	4.06	10.67	2.03
1.750	1.02	4.750	4.06	7.750	4.06	10.75	2.03
1.833	1.02	4.833	3.05	7.833	3.05	10.83	1.02
1.917	1.02	4.917	3.05	7.917	3.05	10.92	1.02
2.000	1.02	5.000	3.05	8.000	3.05	11.00	1.02
2.083	2.03	5.083	7.11	8.083	2.03	11.08	1.02
2.167	2.03	5.167	7.11	8.167	2.03	11.17	1.02
2.250	2.03	5.250	7.11	8.250	2.03	11.25	1.02
2.333	2.03	5.333	7.11	8.333	2.03	11.33	1.02
2.417	2.03	5.417	7.11	8.417	2.03	11.42	1.02
2.500	2.03	5.500	7.11	8.500	2.03	11.50	1.02
2.583	2.03	5.583	49.78	8.583	3.05	11.58	1.02
2.667	2.03	5.667	49.78	8.667	3.05	11.67	1.02
2.750	2.03	5.750	49.78	8.750	3.05	11.75	1.02
2.833	2.03	5.833	49.78	8.833	2.03	11.83	1.02
2.917	2.03	5.917	49.78	8.917	2.03	11.92	1.02
3.000	2.03	6.000	49.78	9.000	2.03	12.00	1.02

```
    Unit Hyd Qpeak  (cms)=   0.194

    PEAK FLOW       (cms)=   0.010 (i)
    TIME TO PEAK    (hrs)=   6.000
    RUNOFF VOLUME    (mm)=   5.509
    TOTAL RAINFALL   (mm)=  55.372
    RUNOFF COEFFICIENT   =   0.099

    (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
```

```
--------------------
|    READ STORM    |    Filename: C:\Users\ygollamudi\AppD
|                  |              ata\Local\Temp\
|                  |              a5c5a77e-1a97-4929-9604-cb8c0adf0517\bfafd6f8
| Ptotal= 55.37 mm |    Comments: 5yr
--------------------
```

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	1.02	3.25	3.05	6.25	9.14	9.25	1.02
0.50	1.02	3.50	2.03	6.50	10.16	9.50	2.03
0.75	1.02	3.75	2.03	6.75	5.08	9.75	2.03
1.00	1.02	4.00	2.03	7.00	4.06	10.00	1.02
1.25	1.02	4.25	4.06	7.25	3.05	10.25	1.02
1.50	2.03	4.50	4.06	7.50	3.05	10.50	1.02
1.75	1.02	4.75	4.06	7.75	4.06	10.75	2.03
2.00	1.02	5.00	3.05	8.00	3.05	11.00	1.02
2.25	2.03	5.25	7.11	8.25	2.03	11.25	1.02
2.50	2.03	5.50	7.11	8.50	2.03	11.50	1.02
2.75	2.03	5.75	49.78	8.75	3.05	11.75	1.02
3.00	2.03	6.00	49.78	9.00	2.03	12.00	1.02

```
--------------------
| CALIB             |
| NASHYD   (  0100)|   Area     (ha)=   1.17   Curve Number    (CN)= 44.0
|ID= 1 DT= 5.0 min |   Ia       (mm)=  10.00   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.12

        NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.
```

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.02	3.083	3.05	6.083	9.14	9.08	1.02
0.167	1.02	3.167	3.05	6.167	9.14	9.17	1.02
0.250	1.02	3.250	3.05	6.250	9.14	9.25	1.02
0.333	1.02	3.333	2.03	6.333	10.16	9.33	2.03
0.417	1.02	3.417	2.03	6.417	10.16	9.42	2.03
0.500	1.02	3.500	2.03	6.500	10.16	9.50	2.03

0.583	1.02	3.583	2.03	6.583	5.08	9.58	2.03
0.667	1.02	3.667	2.03	6.667	5.08	9.67	2.03
0.750	1.02	3.750	2.03	6.750	5.08	9.75	2.03
0.833	1.02	3.833	2.03	6.833	4.06	9.83	1.02
0.917	1.02	3.917	2.03	6.917	4.06	9.92	1.02
1.000	1.02	4.000	2.03	7.000	4.06	10.00	1.02
1.083	1.02	4.083	4.06	7.083	3.05	10.08	1.02
1.167	1.02	4.167	4.06	7.167	3.05	10.17	1.02
1.250	1.02	4.250	4.06	7.250	3.05	10.25	1.02
1.333	2.03	4.333	4.06	7.333	3.05	10.33	1.02
1.417	2.03	4.417	4.06	7.417	3.05	10.42	1.02
1.500	2.03	4.500	4.06	7.500	3.05	10.50	1.02
1.583	1.02	4.583	4.06	7.583	4.06	10.58	2.03
1.667	1.02	4.667	4.06	7.667	4.06	10.67	2.03
1.750	1.02	4.750	4.06	7.750	4.06	10.75	2.03
1.833	1.02	4.833	3.05	7.833	3.05	10.83	1.02
1.917	1.02	4.917	3.05	7.917	3.05	10.92	1.02
2.000	1.02	5.000	3.05	8.000	3.05	11.00	1.02
2.083	2.03	5.083	7.11	8.083	2.03	11.08	1.02
2.167	2.03	5.167	7.11	8.167	2.03	11.17	1.02
2.250	2.03	5.250	7.11	8.250	2.03	11.25	1.02
2.333	2.03	5.333	7.11	8.333	2.03	11.33	1.02
2.417	2.03	5.417	7.11	8.417	2.03	11.42	1.02
2.500	2.03	5.500	7.11	8.500	2.03	11.50	1.02
2.583	2.03	5.583	49.78	8.583	3.05	11.58	1.02
2.667	2.03	5.667	49.78	8.667	3.05	11.67	1.02
2.750	2.03	5.750	49.78	8.750	3.05	11.75	1.02
2.833	2.03	5.833	49.78	8.833	2.03	11.83	1.02
2.917	2.03	5.917	49.78	8.917	2.03	11.92	1.02
3.000	2.03	6.000	49.78	9.000	2.03	12.00	1.02

Unit Hyd Qpeak (cms)= 0.372

PEAK FLOW (cms)= 0.019 (i)
TIME TO PEAK (hrs)= 6.000
RUNOFF VOLUME (mm)= 5.510
TOTAL RAINFALL (mm)= 55.372
RUNOFF COEFFICIENT = 0.100

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

```
       V    V   I    SSSSS  U   U    A    L
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

        OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
       O   O    T      T    H   H   Y Y   MM MM  O   O
       O   O    T      T    H   H    Y    M   M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
```

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***** D E T A I L E D O U T P U T *****

Input filename: C:\Program Files (x86)\Visual OTTHYMO 5.0\VO2\voin.dat
Output filename: C:\Users\ygollamudi\AppData\Local\Civica\VH5\10c26041-43a5-4194-90ea-ce2e7e4124a0\c8a78a6f-d6ac-4397-aec5-891e57115cd4\s
Summary filename: C:\Users\ygollamudi\AppData\Local\Civica\VH5\10c26041-43a5-4194-90ea-ce2e7e4124a0\c8a78a6f-d6ac-4397-aec5-891e57115cd4\s

DATE: 05-07-2019 TIME: 09:07:48

USER:

COMMENTS: _____

****
** SIMULATION : Run 03 **
****

READ STORM	Filename: C:\Users\ygollamudi\AppData\Local\Temp\a5c5a77e-1a97-4929-9604-cb8c0adf0517\a8794606
Ptotal= 63.75 mm	Comments: 10yr

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	1.02	3.25	3.05	6.25	11.18	9.25	2.03
0.50	2.03	3.50	2.03	6.50	11.18	9.50	2.03
0.75	1.02	3.75	3.05	6.75	5.08	9.75	2.03
1.00	1.02	4.00	2.03	7.00	5.08	10.00	2.03
1.25	1.02	4.25	5.08	7.25	4.06	10.25	1.02
1.50	2.03	4.50	4.06	7.50	4.06	10.50	1.02
1.75	1.02	4.75	4.06	7.75	4.06	10.75	2.03
2.00	1.02	5.00	5.08	8.00	3.05	11.00	1.02
2.25	3.05	5.25	7.11	8.25	3.05	11.25	1.02
2.50	2.03	5.50	8.13	8.50	2.03	11.50	1.02
2.75	3.05	5.75	56.90	8.75	3.05	11.75	2.03
3.00	2.03	6.00	57.91	9.00	2.03	12.00	1.02

CALIB			
NASHYD (0104)	Area (ha)= 0.99	Curve Number (CN)= 44.0
ID= 1 DT= 5.0 min	Ia (mm)= 10.00	# of Linear Res.(N)= 3.00
	U.H. Tp(hrs)= 0.12	

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.02	3.083	3.05	6.083	11.18	9.08	2.03

0.167	1.02	3.167	3.05	6.167	11.18	9.17	2.03
0.250	1.02	3.250	3.05	6.250	11.18	9.25	2.03
0.333	2.03	3.333	2.03	6.333	11.18	9.33	2.03
0.417	2.03	3.417	2.03	6.417	11.18	9.42	2.03
0.500	2.03	3.500	2.03	6.500	11.18	9.50	2.03
0.583	1.02	3.583	3.05	6.583	5.08	9.58	2.03
0.667	1.02	3.667	3.05	6.667	5.08	9.67	2.03
0.750	1.02	3.750	3.05	6.750	5.08	9.75	2.03
0.833	1.02	3.833	2.03	6.833	5.08	9.83	2.03
0.917	1.02	3.917	2.03	6.917	5.08	9.92	2.03
1.000	1.02	4.000	2.03	7.000	5.08	10.00	2.03
1.083	1.02	4.083	5.08	7.083	4.06	10.08	1.02
1.167	1.02	4.167	5.08	7.167	4.06	10.17	1.02
1.250	1.02	4.250	5.08	7.250	4.06	10.25	1.02
1.333	2.03	4.333	4.06	7.333	4.06	10.33	1.02
1.417	2.03	4.417	4.06	7.417	4.06	10.42	1.02
1.500	2.03	4.500	4.06	7.500	4.06	10.50	1.02
1.583	1.02	4.583	4.06	7.583	4.06	10.58	2.03
1.667	1.02	4.667	4.06	7.667	4.06	10.67	2.03
1.750	1.02	4.750	4.06	7.750	4.06	10.75	2.03
1.833	1.02	4.833	5.08	7.833	3.05	10.83	1.02
1.917	1.02	4.917	5.08	7.917	3.05	10.92	1.02
2.000	1.02	5.000	5.08	8.000	3.05	11.00	1.02
2.083	3.05	5.083	7.11	8.083	3.05	11.08	1.02
2.167	3.05	5.167	7.11	8.167	3.05	11.17	1.02
2.250	3.05	5.250	7.11	8.250	3.05	11.25	1.02
2.333	2.03	5.333	8.13	8.333	2.03	11.33	1.02
2.417	2.03	5.417	8.13	8.417	2.03	11.42	1.02
2.500	2.03	5.500	8.13	8.500	2.03	11.50	1.02
2.583	3.05	5.583	56.90	8.583	3.05	11.58	2.03
2.667	3.05	5.667	56.90	8.667	3.05	11.67	2.03
2.750	3.05	5.750	56.90	8.750	3.05	11.75	2.03
2.833	2.03	5.833	57.91	8.833	2.03	11.83	1.02
2.917	2.03	5.917	57.91	8.917	2.03	11.92	1.02
3.000	2.03	6.000	57.91	9.000	2.03	12.00	1.02

Unit Hyd Qpeak (cms)= 0.315

PEAK FLOW (cms)= 0.023 (i)
TIME TO PEAK (hrs)= 6.000
RUNOFF VOLUME (mm)= 7.561
TOTAL RAINFALL (mm)= 63.754
RUNOFF COEFFICIENT = 0.119

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

READ STORM	Filename: C:\Users\ygollamudi\AppData\Local\Temp\a5c5a77e-1a97-4929-9604-cb8c0adf0517\a8794606
Ptotal= 63.75 mm	Comments: 10yr

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	1.02	3.25	3.05	6.25	11.18	9.25	2.03
0.50	2.03	3.50	2.03	6.50	11.18	9.50	2.03
0.75	1.02	3.75	3.05	6.75	5.08	9.75	2.03
1.00	1.02	4.00	2.03	7.00	5.08	10.00	2.03
1.25	1.02	4.25	5.08	7.25	4.06	10.25	1.02
1.50	2.03	4.50	4.06	7.50	4.06	10.50	1.02
1.75	1.02	4.75	4.06	7.75	4.06	10.75	2.03
2.00	1.02	5.00	5.08	8.00	3.05	11.00	1.02
2.25	3.05	5.25	7.11	8.25	3.05	11.25	1.02
2.50	2.03	5.50	8.13	8.50	2.03	11.50	1.02
2.75	3.05	5.75	56.90	8.75	3.05	11.75	2.03
3.00	2.03	6.00	57.91	9.00	2.03	12.00	1.02

CALIB			
NASHYD (0105)	Area (ha)= 2.32	Curve Number (CN)= 55.0	
ID= 1 DT= 5.0 min	Ia (mm)= 10.00	# of Linear Res.(N)= 3.00	
	U.H. Tp(hrs)= 0.12		

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.02	3.083	3.05	6.083	11.18	9.08	2.03
0.167	1.02	3.167	3.05	6.167	11.18	9.17	2.03
0.250	1.02	3.250	3.05	6.250	11.18	9.25	2.03
0.333	2.03	3.333	2.03	6.333	11.18	9.33	2.03
0.417	2.03	3.417	2.03	6.417	11.18	9.42	2.03
0.500	2.03	3.500	2.03	6.500	11.18	9.50	2.03
0.583	1.02	3.583	3.05	6.583	5.08	9.58	2.03
0.667	1.02	3.667	3.05	6.667	5.08	9.67	2.03
0.750	1.02	3.750	3.05	6.750	5.08	9.75	2.03
0.833	1.02	3.833	2.03	6.833	5.08	9.83	2.03
0.917	1.02	3.917	2.03	6.917	5.08	9.92	2.03
1.000	1.02	4.000	2.03	7.000	5.08	10.00	2.03
1.083	1.02	4.083	5.08	7.083	4.06	10.08	1.02
1.167	1.02	4.167	5.08	7.167	4.06	10.17	1.02
1.250	1.02	4.250	5.08	7.250	4.06	10.25	1.02
1.333	2.03	4.333	4.06	7.333	4.06	10.33	1.02
1.417	2.03	4.417	4.06	7.417	4.06	10.42	1.02
1.500	2.03	4.500	4.06	7.500	4.06	10.50	1.02
1.583	1.02	4.583	4.06	7.583	4.06	10.58	2.03
1.667	1.02	4.667	4.06	7.667	4.06	10.67	2.03
1.750	1.02	4.750	4.06	7.750	4.06	10.75	2.03
1.833	1.02	4.833	5.08	7.833	3.05	10.83	1.02
1.917	1.02	4.917	5.08	7.917	3.05	10.92	1.02
2.000	1.02	5.000	5.08	8.000	3.05	11.00	1.02
2.083	3.05	5.083	7.11	8.083	3.05	11.08	1.02
2.167	3.05	5.167	7.11	8.167	3.05	11.17	1.02
2.250	3.05	5.250	7.11	8.250	3.05	11.25	1.02
2.333	2.03	5.333	8.13	8.333	2.03	11.33	1.02
2.417	2.03	5.417	8.13	8.417	2.03	11.42	1.02
2.500	2.03	5.500	8.13	8.500	2.03	11.50	1.02
2.583	3.05	5.583	56.90	8.583	3.05	11.58	2.03
2.667	3.05	5.667	56.90	8.667	3.05	11.67	2.03
2.750	3.05	5.750	56.90	8.750	3.05	11.75	2.03
2.833	2.03	5.833	57.91	8.833	2.03	11.83	1.02
2.917	2.03	5.917	57.91	8.917	2.03	11.92	1.02
3.000	2.03	6.000	57.91	9.000	2.03	12.00	1.02

Unit Hyd Qpeak (cms)= 0.738

```
     PEAK FLOW       (cms)=   0.078 (i)
     TIME TO PEAK    (hrs)=   6.000
     RUNOFF VOLUME    (mm)=  10.899
     TOTAL RAINFALL   (mm)=  63.754
     RUNOFF COEFFICIENT   =   0.171

     (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
```

```
--------------------
|    READ STORM    |    Filename: C:\Users\ygollamudi\AppD
|                  |              ata\Local\Temp\
|                  |              a5c5a77e-1a97-4929-9604-cb8c0adf0517\a8794606
| Ptotal= 63.75 mm |    Comments: 10yr
--------------------
```

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	1.02	3.25	3.05	6.25	11.18	9.25	2.03
0.50	2.03	3.50	2.03	6.50	11.18	9.50	2.03
0.75	1.02	3.75	3.05	6.75	5.08	9.75	2.03
1.00	1.02	4.00	2.03	7.00	5.08	10.00	2.03
1.25	1.02	4.25	5.08	7.25	4.06	10.25	1.02
1.50	2.03	4.50	4.06	7.50	4.06	10.50	1.02
1.75	1.02	4.75	4.06	7.75	4.06	10.75	2.03
2.00	1.02	5.00	5.08	8.00	3.05	11.00	1.02
2.25	3.05	5.25	7.11	8.25	3.05	11.25	1.02
2.50	2.03	5.50	8.13	8.50	2.03	11.50	1.02
2.75	3.05	5.75	56.90	8.75	3.05	11.75	2.03
3.00	2.03	6.00	57.91	9.00	2.03	12.00	1.02

```
--------------------
| CALIB            |
| NASHYD   (  0106)|   Area     (ha)=   1.08   Curve Number    (CN)= 59.0
|ID= 1 DT= 5.0 min |   Ia       (mm)=  10.00   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.12

        NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.
```

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.02	3.083	3.05	6.083	11.18	9.08	2.03
0.167	1.02	3.167	3.05	6.167	11.18	9.17	2.03
0.250	1.02	3.250	3.05	6.250	11.18	9.25	2.03
0.333	2.03	3.333	2.03	6.333	11.18	9.33	2.03
0.417	2.03	3.417	2.03	6.417	11.18	9.42	2.03
0.500	2.03	3.500	2.03	6.500	11.18	9.50	2.03
0.583	1.02	3.583	3.05	6.583	5.08	9.58	2.03
0.667	1.02	3.667	3.05	6.667	5.08	9.67	2.03
0.750	1.02	3.750	3.05	6.750	5.08	9.75	2.03
0.833	1.02	3.833	2.03	6.833	5.08	9.83	2.03
0.917	1.02	3.917	2.03	6.917	5.08	9.92	2.03
1.000	1.02	4.000	2.03	7.000	5.08	10.00	2.03
1.083	1.02	4.083	5.08	7.083	4.06	10.08	1.02
1.167	1.02	4.167	5.08	7.167	4.06	10.17	1.02
1.250	1.02	4.250	5.08	7.250	4.06	10.25	1.02
1.333	2.03	4.333	4.06	7.333	4.06	10.33	1.02
1.417	2.03	4.417	4.06	7.417	4.06	10.42	1.02
1.500	2.03	4.500	4.06	7.500	4.06	10.50	1.02
1.583	1.02	4.583	4.06	7.583	4.06	10.58	2.03
1.667	1.02	4.667	4.06	7.667	4.06	10.67	2.03
1.750	1.02	4.750	4.06	7.750	4.06	10.75	2.03
1.833	1.02	4.833	5.08	7.833	3.05	10.83	1.02
1.917	1.02	4.917	5.08	7.917	3.05	10.92	1.02
2.000	1.02	5.000	5.08	8.000	3.05	11.00	1.02
2.083	3.05	5.083	7.11	8.083	3.05	11.08	1.02
2.167	3.05	5.167	7.11	8.167	3.05	11.17	1.02
2.250	3.05	5.250	7.11	8.250	3.05	11.25	1.02
2.333	2.03	5.333	8.13	8.333	2.03	11.33	1.02
2.417	2.03	5.417	8.13	8.417	2.03	11.42	1.02
2.500	2.03	5.500	8.13	8.500	2.03	11.50	1.02
2.583	3.05	5.583	56.90	8.583	3.05	11.58	2.03
2.667	3.05	5.667	56.90	8.667	3.05	11.67	2.03
2.750	3.05	5.750	56.90	8.750	3.05	11.75	2.03
2.833	2.03	5.833	57.91	8.833	2.03	11.83	1.02
2.917	2.03	5.917	57.91	8.917	2.03	11.92	1.02
3.000	2.03	6.000	57.91	9.000	2.03	12.00	1.02

```
     Unit Hyd Qpeak  (cms)=   0.343

     PEAK FLOW       (cms)=   0.041 (i)
     TIME TO PEAK    (hrs)=   6.000
     RUNOFF VOLUME    (mm)=  12.381
     TOTAL RAINFALL   (mm)=  63.754
     RUNOFF COEFFICIENT   =   0.194

     (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
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|    READ STORM    |    Filename: C:\Users\ygollamudi\AppD
|                  |              ata\Local\Temp\
|                  |              a5c5a77e-1a97-4929-9604-cb8c0adf0517\a8794606
| Ptotal= 63.75 mm |    Comments: 10yr
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```

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	1.02	3.25	3.05	6.25	11.18	9.25	2.03
0.50	2.03	3.50	2.03	6.50	11.18	9.50	2.03
0.75	1.02	3.75	3.05	6.75	5.08	9.75	2.03
1.00	1.02	4.00	2.03	7.00	5.08	10.00	2.03
1.25	1.02	4.25	5.08	7.25	4.06	10.25	1.02
1.50	2.03	4.50	4.06	7.50	4.06	10.50	1.02
1.75	1.02	4.75	4.06	7.75	4.06	10.75	2.03
2.00	1.02	5.00	5.08	8.00	3.05	11.00	1.02
2.25	3.05	5.25	7.11	8.25	3.05	11.25	1.02
2.50	2.03	5.50	8.13	8.50	2.03	11.50	1.02
2.75	3.05	5.75	56.90	8.75	3.05	11.75	2.03
3.00	2.03	6.00	57.91	9.00	2.03	12.00	1.02

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| CALIB            |
| NASHYD   (  0101)|   Area     (ha)=   2.30   Curve Number    (CN)= 55.0
|ID= 1 DT= 5.0 min |   Ia       (mm)=   5.00   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.12
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NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.02	3.083	3.05	6.083	11.18	9.08	2.03
0.167	1.02	3.167	3.05	6.167	11.18	9.17	2.03
0.250	1.02	3.250	3.05	6.250	11.18	9.25	2.03
0.333	2.03	3.333	2.03	6.333	11.18	9.33	2.03
0.417	2.03	3.417	2.03	6.417	11.18	9.42	2.03
0.500	2.03	3.500	2.03	6.500	11.18	9.50	2.03
0.583	1.02	3.583	3.05	6.583	5.08	9.58	2.03
0.667	1.02	3.667	3.05	6.667	5.08	9.67	2.03
0.750	1.02	3.750	3.05	6.750	5.08	9.75	2.03
0.833	1.02	3.833	2.03	6.833	5.08	9.83	2.03
0.917	1.02	3.917	2.03	6.917	5.08	9.92	2.03
1.000	1.02	4.000	2.03	7.000	5.08	10.00	2.03
1.083	1.02	4.083	5.08	7.083	4.06	10.08	1.02
1.167	1.02	4.167	5.08	7.167	4.06	10.17	1.02
1.250	1.02	4.250	5.08	7.250	4.06	10.25	1.02
1.333	2.03	4.333	4.06	7.333	4.06	10.33	1.02
1.417	2.03	4.417	4.06	7.417	4.06	10.42	1.02
1.500	2.03	4.500	4.06	7.500	4.06	10.50	1.02
1.583	1.02	4.583	4.06	7.583	4.06	10.58	2.03
1.667	1.02	4.667	4.06	7.667	4.06	10.67	2.03
1.750	1.02	4.750	4.06	7.750	4.06	10.75	2.03
1.833	1.02	4.833	5.08	7.833	3.05	10.83	1.02
1.917	1.02	4.917	5.08	7.917	3.05	10.92	1.02
2.000	1.02	5.000	5.08	8.000	3.05	11.00	1.02
2.083	3.05	5.083	7.11	8.083	3.05	11.08	1.02
2.167	3.05	5.167	7.11	8.167	3.05	11.17	1.02
2.250	3.05	5.250	7.11	8.250	3.05	11.25	1.02
2.333	2.03	5.333	8.13	8.333	2.03	11.33	1.02
2.417	2.03	5.417	8.13	8.417	2.03	11.42	1.02
2.500	2.03	5.500	8.13	8.500	2.03	11.50	1.02
2.583	3.05	5.583	56.90	8.583	3.05	11.58	2.03
2.667	3.05	5.667	56.90	8.667	3.05	11.67	2.03
2.750	3.05	5.750	56.90	8.750	3.05	11.75	2.03
2.833	2.03	5.833	57.91	8.833	2.03	11.83	1.02
2.917	2.03	5.917	57.91	8.917	2.03	11.92	1.02
3.000	2.03	6.000	57.91	9.000	2.03	12.00	1.02

Unit Hyd Qpeak (cms)= 0.732

PEAK FLOW (cms)= 0.089 (i)
TIME TO PEAK (hrs)= 6.000
RUNOFF VOLUME (mm)= 12.777
TOTAL RAINFALL (mm)= 63.754
RUNOFF COEFFICIENT = 0.200

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

READ STORM	Filename: C:\Users\ygollamudi\AppData\Local\Temp\a5c5a77e-1a97-4929-9604-cb8c0adf0517\a8794606
Ptotal= 63.75 mm	Comments: 10yr

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	1.02	3.25	3.05	6.25	11.18	9.25	2.03
0.50	2.03	3.50	2.03	6.50	11.18	9.50	2.03
0.75	1.02	3.75	3.05	6.75	5.08	9.75	2.03
1.00	1.02	4.00	2.03	7.00	5.08	10.00	2.03
1.25	1.02	4.25	5.08	7.25	4.06	10.25	1.02
1.50	2.03	4.50	4.06	7.50	4.06	10.50	1.02
1.75	1.02	4.75	4.06	7.75	4.06	10.75	2.03
2.00	1.02	5.00	5.08	8.00	3.05	11.00	1.02
2.25	3.05	5.25	7.11	8.25	3.05	11.25	1.02
2.50	2.03	5.50	8.13	8.50	2.03	11.50	1.02
2.75	3.05	5.75	56.90	8.75	3.05	11.75	2.03
3.00	2.03	6.00	57.91	9.00	2.03	12.00	1.02

CALIB	NASHYD (0102)	ID= 1 DT= 5.0 min

Area (ha)= 0.54 Curve Number (CN)= 44.0
Ia (mm)= 10.00 # of Linear Res.(N)= 3.00
U.H. Tp(hrs)= 0.12

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.02	3.083	3.05	6.083	11.18	9.08	2.03
0.167	1.02	3.167	3.05	6.167	11.18	9.17	2.03
0.250	1.02	3.250	3.05	6.250	11.18	9.25	2.03
0.333	2.03	3.333	2.03	6.333	11.18	9.33	2.03
0.417	2.03	3.417	2.03	6.417	11.18	9.42	2.03
0.500	2.03	3.500	2.03	6.500	11.18	9.50	2.03
0.583	1.02	3.583	3.05	6.583	5.08	9.58	2.03
0.667	1.02	3.667	3.05	6.667	5.08	9.67	2.03
0.750	1.02	3.750	3.05	6.750	5.08	9.75	2.03
0.833	1.02	3.833	2.03	6.833	5.08	9.83	2.03
0.917	1.02	3.917	2.03	6.917	5.08	9.92	2.03
1.000	1.02	4.000	2.03	7.000	5.08	10.00	2.03
1.083	1.02	4.083	5.08	7.083	4.06	10.08	1.02
1.167	1.02	4.167	5.08	7.167	4.06	10.17	1.02
1.250	1.02	4.250	5.08	7.250	4.06	10.25	1.02
1.333	2.03	4.333	4.06	7.333	4.06	10.33	1.02
1.417	2.03	4.417	4.06	7.417	4.06	10.42	1.02
1.500	2.03	4.500	4.06	7.500	4.06	10.50	1.02
1.583	1.02	4.583	4.06	7.583	4.06	10.58	2.03
1.667	1.02	4.667	4.06	7.667	4.06	10.67	2.03
1.750	1.02	4.750	4.06	7.750	4.06	10.75	2.03
1.833	1.02	4.833	5.08	7.833	3.05	10.83	1.02
1.917	1.02	4.917	5.08	7.917	3.05	10.92	1.02
2.000	1.02	5.000	5.08	8.000	3.05	11.00	1.02
2.083	3.05	5.083	7.11	8.083	3.05	11.08	1.02
2.167	3.05	5.167	7.11	8.167	3.05	11.17	1.02
2.250	3.05	5.250	7.11	8.250	3.05	11.25	1.02
2.333	2.03	5.333	8.13	8.333	2.03	11.33	1.02
2.417	2.03	5.417	8.13	8.417	2.03	11.42	1.02
2.500	2.03	5.500	8.13	8.500	2.03	11.50	1.02
2.583	3.05	5.583	56.90	8.583	3.05	11.58	2.03

2.667	3.05	5.667	56.90	8.667	3.05	11.67	2.03
2.750	3.05	5.750	56.90	8.750	3.05	11.75	2.03
2.833	2.03	5.833	57.91	8.833	2.03	11.83	1.02
2.917	2.03	5.917	57.91	8.917	2.03	11.92	1.02
3.000	2.03	6.000	57.91	9.000	2.03	12.00	1.02

Unit Hyd Qpeak (cms)= 0.172

PEAK FLOW (cms)= 0.012 (i)
TIME TO PEAK (hrs)= 6.000
RUNOFF VOLUME (mm)= 7.561
TOTAL RAINFALL (mm)= 63.754
RUNOFF COEFFICIENT = 0.119

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

READ STORM	Filename: C:\Users\ygollamudi\AppData\Local\Temp\a5c5a77e-1a97-4929-9604-cb8c0adf0517\a8794606
Ptotal= 63.75 mm	Comments: 10yr

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	1.02	3.25	3.05	6.25	11.18	9.25	2.03
0.50	2.03	3.50	2.03	6.50	11.18	9.50	2.03
0.75	1.02	3.75	3.05	6.75	5.08	9.75	2.03
1.00	1.02	4.00	2.03	7.00	5.08	10.00	2.03
1.25	1.02	4.25	5.08	7.25	4.06	10.25	1.02
1.50	2.03	4.50	4.06	7.50	4.06	10.50	1.02
1.75	1.02	4.75	4.06	7.75	4.06	10.75	2.03
2.00	1.02	5.00	5.08	8.00	3.05	11.00	1.02
2.25	3.05	5.25	7.11	8.25	3.05	11.25	1.02
2.50	2.03	5.50	8.13	8.50	2.03	11.50	1.02
2.75	3.05	5.75	56.90	8.75	3.05	11.75	2.03
3.00	2.03	6.00	57.91	9.00	2.03	12.00	1.02

CALIB	
NASHYD (0103)	Area (ha)= 0.61 Curve Number (CN)= 44.0
ID= 1 DT= 5.0 min	Ia (mm)= 10.00 # of Linear Res.(N)= 3.00
	U.H. Tp(hrs)= 0.12

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.02	3.083	3.05	6.083	11.18	9.08	2.03
0.167	1.02	3.167	3.05	6.167	11.18	9.17	2.03
0.250	1.02	3.250	3.05	6.250	11.18	9.25	2.03
0.333	2.03	3.333	2.03	6.333	11.18	9.33	2.03
0.417	2.03	3.417	2.03	6.417	11.18	9.42	2.03
0.500	2.03	3.500	2.03	6.500	11.18	9.50	2.03
0.583	1.02	3.583	3.05	6.583	5.08	9.58	2.03
0.667	1.02	3.667	3.05	6.667	5.08	9.67	2.03
0.750	1.02	3.750	3.05	6.750	5.08	9.75	2.03
0.833	1.02	3.833	2.03	6.833	5.08	9.83	2.03
0.917	1.02	3.917	2.03	6.917	5.08	9.92	2.03
1.000	1.02	4.000	2.03	7.000	5.08	10.00	2.03
1.083	1.02	4.083	5.08	7.083	4.06	10.08	1.02
1.167	1.02	4.167	5.08	7.167	4.06	10.17	1.02
1.250	1.02	4.250	5.08	7.250	4.06	10.25	1.02
1.333	2.03	4.333	4.06	7.333	4.06	10.33	1.02
1.417	2.03	4.417	4.06	7.417	4.06	10.42	1.02
1.500	2.03	4.500	4.06	7.500	4.06	10.50	1.02
1.583	1.02	4.583	4.06	7.583	4.06	10.58	2.03
1.667	1.02	4.667	4.06	7.667	4.06	10.67	2.03
1.750	1.02	4.750	4.06	7.750	4.06	10.75	2.03
1.833	1.02	4.833	5.08	7.833	3.05	10.83	1.02
1.917	1.02	4.917	5.08	7.917	3.05	10.92	1.02
2.000	1.02	5.000	5.08	8.000	3.05	11.00	1.02
2.083	3.05	5.083	7.11	8.083	3.05	11.08	1.02
2.167	3.05	5.167	7.11	8.167	3.05	11.17	1.02
2.250	3.05	5.250	7.11	8.250	3.05	11.25	1.02
2.333	2.03	5.333	8.13	8.333	2.03	11.33	1.02
2.417	2.03	5.417	8.13	8.417	2.03	11.42	1.02
2.500	2.03	5.500	8.13	8.500	2.03	11.50	1.02
2.583	3.05	5.583	56.90	8.583	3.05	11.58	2.03
2.667	3.05	5.667	56.90	8.667	3.05	11.67	2.03
2.750	3.05	5.750	56.90	8.750	3.05	11.75	2.03
2.833	2.03	5.833	57.91	8.833	2.03	11.83	1.02
2.917	2.03	5.917	57.91	8.917	2.03	11.92	1.02
3.000	2.03	6.000	57.91	9.000	2.03	12.00	1.02

Unit Hyd Qpeak (cms)= 0.194

PEAK FLOW (cms)= 0.014 (i)
TIME TO PEAK (hrs)= 6.000
RUNOFF VOLUME (mm)= 7.561
TOTAL RAINFALL (mm)= 63.754
RUNOFF COEFFICIENT = 0.119

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

READ STORM	Filename: C:\Users\ygollamudi\AppData\Local\Temp\a5c5a77e-1a97-4929-9604-cb8c0adf0517\a8794606
Ptotal= 63.75 mm	Comments: 10yr

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	1.02	3.25	3.05	6.25	11.18	9.25	2.03
0.50	2.03	3.50	2.03	6.50	11.18	9.50	2.03
0.75	1.02	3.75	3.05	6.75	5.08	9.75	2.03
1.00	1.02	4.00	2.03	7.00	5.08	10.00	2.03
1.25	1.02	4.25	5.08	7.25	4.06	10.25	1.02
1.50	2.03	4.50	4.06	7.50	4.06	10.50	1.02
1.75	1.02	4.75	4.06	7.75	4.06	10.75	2.03
2.00	1.02	5.00	5.08	8.00	3.05	11.00	1.02
2.25	3.05	5.25	7.11	8.25	3.05	11.25	1.02
2.50	2.03	5.50	8.13	8.50	2.03	11.50	1.02
2.75	3.05	5.75	56.90	8.75	3.05	11.75	2.03
3.00	2.03	6.00	57.91	9.00	2.03	12.00	1.02

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| CALIB            |
| NASHYD   (  0100)|   Area    (ha)=   1.17   Curve Number    (CN)= 44.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=  10.00   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.12

        NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.
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---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.02	3.083	3.05	6.083	11.18	9.08	2.03
0.167	1.02	3.167	3.05	6.167	11.18	9.17	2.03
0.250	1.02	3.250	3.05	6.250	11.18	9.25	2.03
0.333	2.03	3.333	2.03	6.333	11.18	9.33	2.03
0.417	2.03	3.417	2.03	6.417	11.18	9.42	2.03
0.500	2.03	3.500	2.03	6.500	11.18	9.50	2.03
0.583	1.02	3.583	3.05	6.583	5.08	9.58	2.03
0.667	1.02	3.667	3.05	6.667	5.08	9.67	2.03
0.750	1.02	3.750	3.05	6.750	5.08	9.75	2.03
0.833	1.02	3.833	2.03	6.833	5.08	9.83	2.03
0.917	1.02	3.917	2.03	6.917	5.08	9.92	2.03
1.000	1.02	4.000	2.03	7.000	5.08	10.00	2.03
1.083	1.02	4.083	5.08	7.083	4.06	10.08	1.02
1.167	1.02	4.167	5.08	7.167	4.06	10.17	1.02
1.250	1.02	4.250	5.08	7.250	4.06	10.25	1.02
1.333	2.03	4.333	4.06	7.333	4.06	10.33	1.02
1.417	2.03	4.417	4.06	7.417	4.06	10.42	1.02
1.500	2.03	4.500	4.06	7.500	4.06	10.50	1.02
1.583	1.02	4.583	4.06	7.583	4.06	10.58	2.03
1.667	1.02	4.667	4.06	7.667	4.06	10.67	2.03
1.750	1.02	4.750	4.06	7.750	4.06	10.75	2.03
1.833	1.02	4.833	5.08	7.833	3.05	10.83	1.02
1.917	1.02	4.917	5.08	7.917	3.05	10.92	1.02
2.000	1.02	5.000	5.08	8.000	3.05	11.00	1.02
2.083	3.05	5.083	7.11	8.083	3.05	11.08	1.02
2.167	3.05	5.167	7.11	8.167	3.05	11.17	1.02
2.250	3.05	5.250	7.11	8.250	3.05	11.25	1.02
2.333	2.03	5.333	8.13	8.333	2.03	11.33	1.02
2.417	2.03	5.417	8.13	8.417	2.03	11.42	1.02
2.500	2.03	5.500	8.13	8.500	2.03	11.50	1.02
2.583	3.05	5.583	56.90	8.583	3.05	11.58	2.03
2.667	3.05	5.667	56.90	8.667	3.05	11.67	2.03
2.750	3.05	5.750	56.90	8.750	3.05	11.75	2.03
2.833	2.03	5.833	57.91	8.833	2.03	11.83	1.02
2.917	2.03	5.917	57.91	8.917	2.03	11.92	1.02
3.000	2.03	6.000	57.91	9.000	2.03	12.00	1.02

```
    Unit Hyd Qpeak  (cms)=   0.372

    PEAK FLOW       (cms)=   0.027 (i)
    TIME TO PEAK    (hrs)=   6.000
    RUNOFF VOLUME    (mm)=   7.561
    TOTAL RAINFALL   (mm)=  63.754
    RUNOFF COEFFICIENT   =   0.119

    (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
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 FINISH
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      V    V   I    SSSSS  U   U    A    L
      V    V   I    SS     U   U   A A   L
       V  V    I     SS    U   U  AAAAA  L
       V  V    I      SS   U   U  A   A  L
        VV     I    SSSSS  UUUUU  A   A  LLLLL

       OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
      O   O    T      T    H   H   Y Y   MM MM  O   O
      O   O    T      T    H   H    Y    M   M  O   O
       OOO     T      T    H   H    Y    M   M   OOO
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                  *****  D E T A I L E D   O U T P U T *****


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 5.0\VO2\voin.dat
  Output  filename: C:\Users\ygollamudi\AppData\Local\Civica\VH5\10c26041-43a5-
4194-90ea-ce2e7e4124a0\17d4fea0-dc32-45c0-8325-83ea3495387e\s
  Summary filename: C:\Users\ygollamudi\AppData\Local\Civica\VH5\10c26041-43a5-
4194-90ea-ce2e7e4124a0\17d4fea0-dc32-45c0-8325-83ea3495387e\s


DATE: 05-07-2019                          TIME: 09:07:48

USER:



COMMENTS: _____________________________________________________________

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  ***********************************************
  ** SIMULATION : Run 04                       **
  ***********************************************


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|    READ STORM    |    Filename: C:\Users\ygollamudi\AppD
|                  |              ata\Local\Temp\
|                  |              a5c5a77e-1a97-4929-9604-cb8c0adf0517\ed829e8d
| Ptotal= 74.42 mm |    Comments: 25yr
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```

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	1.02	3.25	3.05	6.25	13.21	9.25	3.05
0.50	2.03	3.50	3.05	6.50	13.21	9.50	2.03

0.75	1.02	3.75	3.05	6.75	6.10	9.75	2.03
1.00	2.03	4.00	3.05	7.00	6.10	10.00	2.03
1.25	1.02	4.25	5.08	7.25	5.08	10.25	2.03
1.50	2.03	4.50	5.08	7.50	4.06	10.50	1.02
1.75	1.02	4.75	6.10	7.75	4.06	10.75	2.03
2.00	2.03	5.00	5.08	8.00	5.08	11.00	1.02
2.25	3.05	5.25	8.13	8.25	3.05	11.25	2.03
2.50	3.05	5.50	9.14	8.50	3.05	11.50	1.02
2.75	3.05	5.75	67.06	8.75	3.05	11.75	2.03
3.00	2.03	6.00	67.06	9.00	2.03	12.00	1.02

CALIB					
NASHYD (0104)	Area	(ha)= 0.99	Curve Number	(CN)= 44.0	
ID= 1 DT= 5.0 min	Ia	(mm)= 10.00	# of Linear Res.	(N)= 3.00	
	U.H. Tp	(hrs)= 0.12			

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.02	3.083	3.05	6.083	13.21	9.08	3.05
0.167	1.02	3.167	3.05	6.167	13.21	9.17	3.05
0.250	1.02	3.250	3.05	6.250	13.21	9.25	3.05
0.333	2.03	3.333	3.05	6.333	13.21	9.33	2.03
0.417	2.03	3.417	3.05	6.417	13.21	9.42	2.03
0.500	2.03	3.500	3.05	6.500	13.21	9.50	2.03
0.583	1.02	3.583	3.05	6.583	6.10	9.58	2.03
0.667	1.02	3.667	3.05	6.667	6.10	9.67	2.03
0.750	1.02	3.750	3.05	6.750	6.10	9.75	2.03
0.833	2.03	3.833	3.05	6.833	6.10	9.83	2.03
0.917	2.03	3.917	3.05	6.917	6.10	9.92	2.03
1.000	2.03	4.000	3.05	7.000	6.10	10.00	2.03
1.083	1.02	4.083	5.08	7.083	5.08	10.08	2.03
1.167	1.02	4.167	5.08	7.167	5.08	10.17	2.03
1.250	1.02	4.250	5.08	7.250	5.08	10.25	2.03
1.333	2.03	4.333	5.08	7.333	4.06	10.33	1.02
1.417	2.03	4.417	5.08	7.417	4.06	10.42	1.02
1.500	2.03	4.500	5.08	7.500	4.06	10.50	1.02
1.583	1.02	4.583	6.10	7.583	4.06	10.58	2.03
1.667	1.02	4.667	6.10	7.667	4.06	10.67	2.03
1.750	1.02	4.750	6.10	7.750	4.06	10.75	2.03
1.833	2.03	4.833	5.08	7.833	5.08	10.83	1.02
1.917	2.03	4.917	5.08	7.917	5.08	10.92	1.02
2.000	2.03	5.000	5.08	8.000	5.08	11.00	1.02
2.083	3.05	5.083	8.13	8.083	3.05	11.08	2.03
2.167	3.05	5.167	8.13	8.167	3.05	11.17	2.03
2.250	3.05	5.250	8.13	8.250	3.05	11.25	2.03
2.333	3.05	5.333	9.14	8.333	3.05	11.33	1.02
2.417	3.05	5.417	9.14	8.417	3.05	11.42	1.02
2.500	3.05	5.500	9.14	8.500	3.05	11.50	1.02
2.583	3.05	5.583	67.06	8.583	3.05	11.58	2.03
2.667	3.05	5.667	67.06	8.667	3.05	11.67	2.03
2.750	3.05	5.750	67.06	8.750	3.05	11.75	2.03
2.833	2.03	5.833	67.06	8.833	2.03	11.83	1.02
2.917	2.03	5.917	67.06	8.917	2.03	11.92	1.02
3.000	2.03	6.000	67.05	9.000	2.03	12.00	1.02

Unit Hyd Qpeak (cms)= 0.315

PEAK FLOW (cms)= 0.032 (i)
TIME TO PEAK (hrs)= 6.000
RUNOFF VOLUME (mm)= 10.562
TOTAL RAINFALL (mm)= 74.422
RUNOFF COEFFICIENT = 0.142

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

READ STORM	Filename: C:\Users\ygollamudi\AppData\Local\Temp\a5c5a77e-1a97-4929-9604-cb8c0adf0517\ed829e8d
Ptotal= 74.42 mm	Comments: 25yr

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	1.02	3.25	3.05	6.25	13.21	9.25	3.05
0.50	2.03	3.50	3.05	6.50	13.21	9.50	2.03
0.75	1.02	3.75	3.05	6.75	6.10	9.75	2.03
1.00	2.03	4.00	3.05	7.00	6.10	10.00	2.03
1.25	1.02	4.25	5.08	7.25	5.08	10.25	2.03
1.50	2.03	4.50	5.08	7.50	4.06	10.50	1.02
1.75	1.02	4.75	6.10	7.75	4.06	10.75	2.03
2.00	2.03	5.00	5.08	8.00	5.08	11.00	1.02
2.25	3.05	5.25	8.13	8.25	3.05	11.25	2.03
2.50	3.05	5.50	9.14	8.50	3.05	11.50	1.02
2.75	3.05	5.75	67.06	8.75	3.05	11.75	2.03
3.00	2.03	6.00	67.06	9.00	2.03	12.00	1.02

CALIB					
NASHYD (0105)	Area	(ha)= 2.32	Curve Number	(CN)= 55.0	
ID= 1 DT= 5.0 min	Ia	(mm)= 10.00	# of Linear Res.	(N)= 3.00	
	U.H. Tp	(hrs)= 0.12			

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.02	3.083	3.05	6.083	13.21	9.08	3.05
0.167	1.02	3.167	3.05	6.167	13.21	9.17	3.05
0.250	1.02	3.250	3.05	6.250	13.21	9.25	3.05
0.333	2.03	3.333	3.05	6.333	13.21	9.33	2.03
0.417	2.03	3.417	3.05	6.417	13.21	9.42	2.03
0.500	2.03	3.500	3.05	6.500	13.21	9.50	2.03
0.583	1.02	3.583	3.05	6.583	6.10	9.58	2.03
0.667	1.02	3.667	3.05	6.667	6.10	9.67	2.03
0.750	1.02	3.750	3.05	6.750	6.10	9.75	2.03
0.833	2.03	3.833	3.05	6.833	6.10	9.83	2.03
0.917	2.03	3.917	3.05	6.917	6.10	9.92	2.03
1.000	2.03	4.000	3.05	7.000	6.10	10.00	2.03
1.083	1.02	4.083	5.08	7.083	5.08	10.08	2.03

1.167	1.02	4.167	5.08	7.167	5.08	10.17	2.03
1.250	1.02	4.250	5.08	7.250	5.08	10.25	2.03
1.333	2.03	4.333	5.08	7.333	4.06	10.33	1.02
1.417	2.03	4.417	5.08	7.417	4.06	10.42	1.02
1.500	2.03	4.500	5.08	7.500	4.06	10.50	1.02
1.583	1.02	4.583	6.10	7.583	4.06	10.58	2.03
1.667	1.02	4.667	6.10	7.667	4.06	10.67	2.03
1.750	1.02	4.750	6.10	7.750	4.06	10.75	2.03
1.833	2.03	4.833	5.08	7.833	5.08	10.83	1.02
1.917	2.03	4.917	5.08	7.917	5.08	10.92	1.02
2.000	2.03	5.000	5.08	8.000	5.08	11.00	1.02
2.083	3.05	5.083	8.13	8.083	3.05	11.08	2.03
2.167	3.05	5.167	8.13	8.167	3.05	11.17	2.03
2.250	3.05	5.250	8.13	8.250	3.05	11.25	2.03
2.333	3.05	5.333	9.14	8.333	3.05	11.33	1.02
2.417	3.05	5.417	9.14	8.417	3.05	11.42	1.02
2.500	3.05	5.500	9.14	8.500	3.05	11.50	1.02
2.583	3.05	5.583	67.06	8.583	3.05	11.58	2.03
2.667	3.05	5.667	67.06	8.667	3.05	11.67	2.03
2.750	3.05	5.750	67.06	8.750	3.05	11.75	2.03
2.833	2.03	5.833	67.06	8.833	2.03	11.83	1.02
2.917	2.03	5.917	67.06	8.917	2.03	11.92	1.02
3.000	2.03	6.000	67.05	9.000	2.03	12.00	1.02

Unit Hyd Qpeak (cms)= 0.738

PEAK FLOW (cms)= 0.107 (i)
TIME TO PEAK (hrs)= 6.000
RUNOFF VOLUME (mm)= 15.041
TOTAL RAINFALL (mm)= 74.422
RUNOFF COEFFICIENT = 0.202

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

READ STORM	Filename: C:\Users\ygollamudi\AppData\Local\Temp\a5c5a77e-1a97-4929-9604-cb8c0adf0517\ed829e8d
Ptotal= 74.42 mm	Comments: 25yr

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	1.02	3.25	3.05	6.25	13.21	9.25	3.05
0.50	2.03	3.50	3.05	6.50	13.21	9.50	2.03
0.75	1.02	3.75	3.05	6.75	6.10	9.75	2.03
1.00	2.03	4.00	3.05	7.00	6.10	10.00	2.03
1.25	1.02	4.25	5.08	7.25	5.08	10.25	2.03
1.50	2.03	4.50	5.08	7.50	4.06	10.50	1.02
1.75	1.02	4.75	6.10	7.75	4.06	10.75	2.03
2.00	2.03	5.00	5.08	8.00	5.08	11.00	1.02
2.25	3.05	5.25	8.13	8.25	3.05	11.25	2.03
2.50	3.05	5.50	9.14	8.50	3.05	11.50	1.02
2.75	3.05	5.75	67.06	8.75	3.05	11.75	2.03
3.00	2.03	6.00	67.06	9.00	2.03	12.00	1.02

CALIB

NASHYD (0106)	Area (ha)= 1.08	Curve Number (CN)= 59.0
ID= 1 DT= 5.0 min	Ia (mm)= 10.00	# of Linear Res.(N)= 3.00
	U.H. Tp(hrs)= 0.12	

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.02	3.083	3.05	6.083	13.21	9.08	3.05
0.167	1.02	3.167	3.05	6.167	13.21	9.17	3.05
0.250	1.02	3.250	3.05	6.250	13.21	9.25	3.05
0.333	2.03	3.333	3.05	6.333	13.21	9.33	2.03
0.417	2.03	3.417	3.05	6.417	13.21	9.42	2.03
0.500	2.03	3.500	3.05	6.500	13.21	9.50	2.03
0.583	1.02	3.583	3.05	6.583	6.10	9.58	2.03
0.667	1.02	3.667	3.05	6.667	6.10	9.67	2.03
0.750	1.02	3.750	3.05	6.750	6.10	9.75	2.03
0.833	2.03	3.833	3.05	6.833	6.10	9.83	2.03
0.917	2.03	3.917	3.05	6.917	6.10	9.92	2.03
1.000	2.03	4.000	3.05	7.000	6.10	10.00	2.03
1.083	1.02	4.083	5.08	7.083	5.08	10.08	2.03
1.167	1.02	4.167	5.08	7.167	5.08	10.17	2.03
1.250	1.02	4.250	5.08	7.250	5.08	10.25	2.03
1.333	2.03	4.333	5.08	7.333	4.06	10.33	1.02
1.417	2.03	4.417	5.08	7.417	4.06	10.42	1.02
1.500	2.03	4.500	5.08	7.500	4.06	10.50	1.02
1.583	1.02	4.583	6.10	7.583	4.06	10.58	2.03
1.667	1.02	4.667	6.10	7.667	4.06	10.67	2.03
1.750	1.02	4.750	6.10	7.750	4.06	10.75	2.03
1.833	2.03	4.833	5.08	7.833	5.08	10.83	1.02
1.917	2.03	4.917	5.08	7.917	5.08	10.92	1.02
2.000	2.03	5.000	5.08	8.000	5.08	11.00	1.02
2.083	3.05	5.083	8.13	8.083	3.05	11.08	2.03
2.167	3.05	5.167	8.13	8.167	3.05	11.17	2.03
2.250	3.05	5.250	8.13	8.250	3.05	11.25	2.03
2.333	3.05	5.333	9.14	8.333	3.05	11.33	1.02
2.417	3.05	5.417	9.14	8.417	3.05	11.42	1.02
2.500	3.05	5.500	9.14	8.500	3.05	11.50	1.02
2.583	3.05	5.583	67.06	8.583	3.05	11.58	2.03
2.667	3.05	5.667	67.06	8.667	3.05	11.67	2.03
2.750	3.05	5.750	67.06	8.750	3.05	11.75	2.03
2.833	2.03	5.833	67.06	8.833	2.03	11.83	1.02
2.917	2.03	5.917	67.06	8.917	2.03	11.92	1.02
3.000	2.03	6.000	67.05	9.000	2.03	12.00	1.02

Unit Hyd Qpeak (cms)= 0.343

PEAK FLOW (cms)= 0.056 (i)
TIME TO PEAK (hrs)= 6.000
RUNOFF VOLUME (mm)= 16.995
TOTAL RAINFALL (mm)= 74.422
RUNOFF COEFFICIENT = 0.228

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

READ STORM	Filename: C:\Users\ygollamudi\AppD

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|                  |             ata\Local\Temp\
|                  |             a5c5a77e-1a97-4929-9604-cb8c0adf0517\ed829e8d
| Ptotal= 74.42 mm |    Comments: 25yr
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TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	1.02	3.25	3.05	6.25	13.21	9.25	3.05
0.50	2.03	3.50	3.05	6.50	13.21	9.50	2.03
0.75	1.02	3.75	3.05	6.75	6.10	9.75	2.03
1.00	2.03	4.00	3.05	7.00	6.10	10.00	2.03
1.25	1.02	4.25	5.08	7.25	5.08	10.25	2.03
1.50	2.03	4.50	5.08	7.50	4.06	10.50	1.02
1.75	1.02	4.75	6.10	7.75	4.06	10.75	2.03
2.00	2.03	5.00	5.08	8.00	5.08	11.00	1.02
2.25	3.05	5.25	8.13	8.25	3.05	11.25	2.03
2.50	3.05	5.50	9.14	8.50	3.05	11.50	1.02
2.75	3.05	5.75	67.06	8.75	3.05	11.75	2.03
3.00	2.03	6.00	67.06	9.00	2.03	12.00	1.02

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| CALIB            |
| NASHYD   (  0101)|   Area     (ha)=   2.30   Curve Number    (CN)= 55.0
|ID= 1 DT= 5.0 min |   Ia       (mm)=   5.00   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.12

        NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.
```

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.02	3.083	3.05	6.083	13.21	9.08	3.05
0.167	1.02	3.167	3.05	6.167	13.21	9.17	3.05
0.250	1.02	3.250	3.05	6.250	13.21	9.25	3.05
0.333	2.03	3.333	3.05	6.333	13.21	9.33	2.03
0.417	2.03	3.417	3.05	6.417	13.21	9.42	2.03
0.500	2.03	3.500	3.05	6.500	13.21	9.50	2.03
0.583	1.02	3.583	3.05	6.583	6.10	9.58	2.03
0.667	1.02	3.667	3.05	6.667	6.10	9.67	2.03
0.750	1.02	3.750	3.05	6.750	6.10	9.75	2.03
0.833	2.03	3.833	3.05	6.833	6.10	9.83	2.03
0.917	2.03	3.917	3.05	6.917	6.10	9.92	2.03
1.000	2.03	4.000	3.05	7.000	6.10	10.00	2.03
1.083	1.02	4.083	5.08	7.083	5.08	10.08	2.03
1.167	1.02	4.167	5.08	7.167	5.08	10.17	2.03
1.250	1.02	4.250	5.08	7.250	5.08	10.25	2.03
1.333	2.03	4.333	5.08	7.333	4.06	10.33	1.02
1.417	2.03	4.417	5.08	7.417	4.06	10.42	1.02
1.500	2.03	4.500	5.08	7.500	4.06	10.50	1.02
1.583	1.02	4.583	6.10	7.583	4.06	10.58	2.03
1.667	1.02	4.667	6.10	7.667	4.06	10.67	2.03
1.750	1.02	4.750	6.10	7.750	4.06	10.75	2.03
1.833	2.03	4.833	5.08	7.833	5.08	10.83	1.02
1.917	2.03	4.917	5.08	7.917	5.08	10.92	1.02
2.000	2.03	5.000	5.08	8.000	5.08	11.00	1.02
2.083	3.05	5.083	8.13	8.083	3.05	11.08	2.03
2.167	3.05	5.167	8.13	8.167	3.05	11.17	2.03
2.250	3.05	5.250	8.13	8.250	3.05	11.25	2.03
2.333	3.05	5.333	9.14	8.333	3.05	11.33	1.02
2.417	3.05	5.417	9.14	8.417	3.05	11.42	1.02
2.500	3.05	5.500	9.14	8.500	3.05	11.50	1.02
2.583	3.05	5.583	67.06	8.583	3.05	11.58	2.03
2.667	3.05	5.667	67.06	8.667	3.05	11.67	2.03
2.750	3.05	5.750	67.06	8.750	3.05	11.75	2.03
2.833	2.03	5.833	67.06	8.833	2.03	11.83	1.02
2.917	2.03	5.917	67.06	8.917	2.03	11.92	1.02
3.000	2.03	6.000	67.05	9.000	2.03	12.00	1.02

```
     Unit Hyd Qpeak  (cms)=   0.732

     PEAK FLOW       (cms)=   0.119 (i)
     TIME TO PEAK    (hrs)=   6.000
     RUNOFF VOLUME    (mm)=  17.151
     TOTAL RAINFALL   (mm)=  74.422
     RUNOFF COEFFICIENT   =   0.230

     (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
```

```
--------------------
|    READ STORM    |    Filename: C:\Users\ygollamudi\AppD
|                  |             ata\Local\Temp\
|                  |             a5c5a77e-1a97-4929-9604-cb8c0adf0517\ed829e8d
| Ptotal= 74.42 mm |    Comments: 25yr
--------------------
```

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	1.02	3.25	3.05	6.25	13.21	9.25	3.05
0.50	2.03	3.50	3.05	6.50	13.21	9.50	2.03
0.75	1.02	3.75	3.05	6.75	6.10	9.75	2.03
1.00	2.03	4.00	3.05	7.00	6.10	10.00	2.03
1.25	1.02	4.25	5.08	7.25	5.08	10.25	2.03
1.50	2.03	4.50	5.08	7.50	4.06	10.50	1.02
1.75	1.02	4.75	6.10	7.75	4.06	10.75	2.03
2.00	2.03	5.00	5.08	8.00	5.08	11.00	1.02
2.25	3.05	5.25	8.13	8.25	3.05	11.25	2.03
2.50	3.05	5.50	9.14	8.50	3.05	11.50	1.02
2.75	3.05	5.75	67.06	8.75	3.05	11.75	2.03
3.00	2.03	6.00	67.06	9.00	2.03	12.00	1.02

```
--------------------
| CALIB            |
| NASHYD   (  0102)|   Area     (ha)=   0.54   Curve Number    (CN)= 44.0
|ID= 1 DT= 5.0 min |   Ia       (mm)=  10.00   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.12

        NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.
```

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.02	3.083	3.05	6.083	13.21	9.08	3.05
0.167	1.02	3.167	3.05	6.167	13.21	9.17	3.05
0.250	1.02	3.250	3.05	6.250	13.21	9.25	3.05
0.333	2.03	3.333	3.05	6.333	13.21	9.33	2.03
0.417	2.03	3.417	3.05	6.417	13.21	9.42	2.03

0.500	2.03	3.500	3.05	6.500	13.21	9.50	2.03
0.583	1.02	3.583	3.05	6.583	6.10	9.58	2.03
0.667	1.02	3.667	3.05	6.667	6.10	9.67	2.03
0.750	1.02	3.750	3.05	6.750	6.10	9.75	2.03
0.833	2.03	3.833	3.05	6.833	6.10	9.83	2.03
0.917	2.03	3.917	3.05	6.917	6.10	9.92	2.03
1.000	2.03	4.000	3.05	7.000	6.10	10.00	2.03
1.083	1.02	4.083	5.08	7.083	5.08	10.08	2.03
1.167	1.02	4.167	5.08	7.167	5.08	10.17	2.03
1.250	1.02	4.250	5.08	7.250	5.08	10.25	2.03
1.333	2.03	4.333	5.08	7.333	4.06	10.33	1.02
1.417	2.03	4.417	5.08	7.417	4.06	10.42	1.02
1.500	2.03	4.500	5.08	7.500	4.06	10.50	1.02
1.583	1.02	4.583	6.10	7.583	4.06	10.58	2.03
1.667	1.02	4.667	6.10	7.667	4.06	10.67	2.03
1.750	1.02	4.750	6.10	7.750	4.06	10.75	2.03
1.833	2.03	4.833	5.08	7.833	5.08	10.83	1.02
1.917	2.03	4.917	5.08	7.917	5.08	10.92	1.02
2.000	2.03	5.000	5.08	8.000	5.08	11.00	1.02
2.083	3.05	5.083	8.13	8.083	3.05	11.08	2.03
2.167	3.05	5.167	8.13	8.167	3.05	11.17	2.03
2.250	3.05	5.250	8.13	8.250	3.05	11.25	2.03
2.333	3.05	5.333	9.14	8.333	3.05	11.33	1.02
2.417	3.05	5.417	9.14	8.417	3.05	11.42	1.02
2.500	3.05	5.500	9.14	8.500	3.05	11.50	1.02
2.583	3.05	5.583	67.06	8.583	3.05	11.58	2.03
2.667	3.05	5.667	67.06	8.667	3.05	11.67	2.03
2.750	3.05	5.750	67.06	8.750	3.05	11.75	2.03
2.833	2.03	5.833	67.06	8.833	2.03	11.83	1.02
2.917	2.03	5.917	67.06	8.917	2.03	11.92	1.02
3.000	2.03	6.000	67.05	9.000	2.03	12.00	1.02

Unit Hyd Qpeak (cms)= 0.172

PEAK FLOW (cms)= 0.017 (i)
TIME TO PEAK (hrs)= 6.000
RUNOFF VOLUME (mm)= 10.561
TOTAL RAINFALL (mm)= 74.422
RUNOFF COEFFICIENT = 0.142

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

READ STORM	Filename: C:\Users\ygollamudi\AppData\Local\Temp\a5c5a77e-1a97-4929-9604-cb8c0adf0517\ed829e8d
Ptotal= 74.42 mm	Comments: 25yr

0.25	1.02	3.25	3.05	6.25	13.21	9.25	3.05
0.50	2.03	3.50	3.05	6.50	13.21	9.50	2.03
0.75	1.02	3.75	3.05	6.75	6.10	9.75	2.03
1.00	2.03	4.00	3.05	7.00	6.10	10.00	2.03
1.25	1.02	4.25	5.08	7.25	5.08	10.25	2.03
1.50	2.03	4.50	5.08	7.50	4.06	10.50	1.02
1.75	1.02	4.75	6.10	7.75	4.06	10.75	2.03
2.00	2.03	5.00	5.08	8.00	5.08	11.00	1.02
2.25	3.05	5.25	8.13	8.25	3.05	11.25	2.03
2.50	3.05	5.50	9.14	8.50	3.05	11.50	1.02
2.75	3.05	5.75	67.06	8.75	3.05	11.75	2.03
3.00	2.03	6.00	67.06	9.00	2.03	12.00	1.02

CALIB			
NASHYD (0103)	Area (ha)= 0.61	Curve Number (CN)= 44.0	
ID= 1 DT= 5.0 min	Ia (mm)= 10.00	# of Linear Res.(N)= 3.00	
	U.H. Tp(hrs)= 0.12		

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.02	3.083	3.05	6.083	13.21	9.08	3.05
0.167	1.02	3.167	3.05	6.167	13.21	9.17	3.05
0.250	1.02	3.250	3.05	6.250	13.21	9.25	3.05
0.333	2.03	3.333	3.05	6.333	13.21	9.33	2.03
0.417	2.03	3.417	3.05	6.417	13.21	9.42	2.03
0.500	2.03	3.500	3.05	6.500	13.21	9.50	2.03
0.583	1.02	3.583	3.05	6.583	6.10	9.58	2.03
0.667	1.02	3.667	3.05	6.667	6.10	9.67	2.03
0.750	1.02	3.750	3.05	6.750	6.10	9.75	2.03
0.833	2.03	3.833	3.05	6.833	6.10	9.83	2.03
0.917	2.03	3.917	3.05	6.917	6.10	9.92	2.03
1.000	2.03	4.000	3.05	7.000	6.10	10.00	2.03
1.083	1.02	4.083	5.08	7.083	5.08	10.08	2.03
1.167	1.02	4.167	5.08	7.167	5.08	10.17	2.03
1.250	1.02	4.250	5.08	7.250	5.08	10.25	2.03
1.333	2.03	4.333	5.08	7.333	4.06	10.33	1.02
1.417	2.03	4.417	5.08	7.417	4.06	10.42	1.02
1.500	2.03	4.500	5.08	7.500	4.06	10.50	1.02
1.583	1.02	4.583	6.10	7.583	4.06	10.58	2.03
1.667	1.02	4.667	6.10	7.667	4.06	10.67	2.03
1.750	1.02	4.750	6.10	7.750	4.06	10.75	2.03
1.833	2.03	4.833	5.08	7.833	5.08	10.83	1.02
1.917	2.03	4.917	5.08	7.917	5.08	10.92	1.02
2.000	2.03	5.000	5.08	8.000	5.08	11.00	1.02
2.083	3.05	5.083	8.13	8.083	3.05	11.08	2.03
2.167	3.05	5.167	8.13	8.167	3.05	11.17	2.03
2.250	3.05	5.250	8.13	8.250	3.05	11.25	2.03
2.333	3.05	5.333	9.14	8.333	3.05	11.33	1.02
2.417	3.05	5.417	9.14	8.417	3.05	11.42	1.02
2.500	3.05	5.500	9.14	8.500	3.05	11.50	1.02
2.583	3.05	5.583	67.06	8.583	3.05	11.58	2.03
2.667	3.05	5.667	67.06	8.667	3.05	11.67	2.03
2.750	3.05	5.750	67.06	8.750	3.05	11.75	2.03
2.833	2.03	5.833	67.06	8.833	2.03	11.83	1.02
2.917	2.03	5.917	67.06	8.917	2.03	11.92	1.02
3.000	2.03	6.000	67.05	9.000	2.03	12.00	1.02

Unit Hyd Qpeak (cms)= 0.194

PEAK FLOW (cms)= 0.019 (i)
TIME TO PEAK (hrs)= 6.000
RUNOFF VOLUME (mm)= 10.561
TOTAL RAINFALL (mm)= 74.422

```
     RUNOFF COEFFICIENT   =   0.142

     (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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--------------------
|    READ STORM    |    Filename: C:\Users\ygollamudi\AppD
|                  |              ata\Local\Temp\
|                  |              a5c5a77e-1a97-4929-9604-cb8c0adf0517\ed829e8d
| Ptotal= 74.42 mm |    Comments: 25yr
--------------------
```

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	1.02	3.25	3.05	6.25	13.21	9.25	3.05
0.50	2.03	3.50	3.05	6.50	13.21	9.50	2.03
0.75	1.02	3.75	3.05	6.75	6.10	9.75	2.03
1.00	2.03	4.00	3.05	7.00	6.10	10.00	2.03
1.25	1.02	4.25	5.08	7.25	5.08	10.25	2.03
1.50	2.03	4.50	5.08	7.50	4.06	10.50	1.02
1.75	1.02	4.75	6.10	7.75	4.06	10.75	2.03
2.00	2.03	5.00	5.08	8.00	5.08	11.00	1.02
2.25	3.05	5.25	8.13	8.25	3.05	11.25	2.03
2.50	3.05	5.50	9.14	8.50	3.05	11.50	1.02
2.75	3.05	5.75	67.06	8.75	3.05	11.75	2.03
3.00	2.03	6.00	67.06	9.00	2.03	12.00	1.02

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--------------------
| CALIB            |
| NASHYD   (  0100)|   Area     (ha)=   1.17   Curve Number    (CN)= 44.0
|ID= 1 DT= 5.0 min |   Ia       (mm)=  10.00   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.12

        NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.
```

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.02	3.083	3.05	6.083	13.21	9.08	3.05
0.167	1.02	3.167	3.05	6.167	13.21	9.17	3.05
0.250	1.02	3.250	3.05	6.250	13.21	9.25	3.05
0.333	2.03	3.333	3.05	6.333	13.21	9.33	2.03
0.417	2.03	3.417	3.05	6.417	13.21	9.42	2.03
0.500	2.03	3.500	3.05	6.500	13.21	9.50	2.03
0.583	1.02	3.583	3.05	6.583	6.10	9.58	2.03
0.667	1.02	3.667	3.05	6.667	6.10	9.67	2.03
0.750	1.02	3.750	3.05	6.750	6.10	9.75	2.03
0.833	2.03	3.833	3.05	6.833	6.10	9.83	2.03
0.917	2.03	3.917	3.05	6.917	6.10	9.92	2.03
1.000	2.03	4.000	3.05	7.000	6.10	10.00	2.03
1.083	1.02	4.083	5.08	7.083	5.08	10.08	2.03
1.167	1.02	4.167	5.08	7.167	5.08	10.17	2.03
1.250	1.02	4.250	5.08	7.250	5.08	10.25	2.03
1.333	2.03	4.333	5.08	7.333	4.06	10.33	1.02
1.417	2.03	4.417	5.08	7.417	4.06	10.42	1.02
1.500	2.03	4.500	5.08	7.500	4.06	10.50	1.02
1.583	1.02	4.583	6.10	7.583	4.06	10.58	2.03
1.667	1.02	4.667	6.10	7.667	4.06	10.67	2.03
1.750	1.02	4.750	6.10	7.750	4.06	10.75	2.03
1.833	2.03	4.833	5.08	7.833	5.08	10.83	1.02
1.917	2.03	4.917	5.08	7.917	5.08	10.92	1.02
2.000	2.03	5.000	5.08	8.000	5.08	11.00	1.02
2.083	3.05	5.083	8.13	8.083	3.05	11.08	2.03
2.167	3.05	5.167	8.13	8.167	3.05	11.17	2.03
2.250	3.05	5.250	8.13	8.250	3.05	11.25	2.03
2.333	3.05	5.333	9.14	8.333	3.05	11.33	1.02
2.417	3.05	5.417	9.14	8.417	3.05	11.42	1.02
2.500	3.05	5.500	9.14	8.500	3.05	11.50	1.02
2.583	3.05	5.583	67.06	8.583	3.05	11.58	2.03
2.667	3.05	5.667	67.06	8.667	3.05	11.67	2.03
2.750	3.05	5.750	67.06	8.750	3.05	11.75	2.03
2.833	2.03	5.833	67.06	8.833	2.03	11.83	1.02
2.917	2.03	5.917	67.06	8.917	2.03	11.92	1.02
3.000	2.03	6.000	67.05	9.000	2.03	12.00	1.02

```
     Unit Hyd Qpeak  (cms)=   0.372

     PEAK FLOW       (cms)=   0.037 (i)
     TIME TO PEAK    (hrs)=   6.000
     RUNOFF VOLUME    (mm)=  10.562
     TOTAL RAINFALL   (mm)=  74.422
     RUNOFF COEFFICIENT   =   0.142

     (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------
================================================================================
=======================

       V    V   I    SSSSS  U   U    A    L
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

        OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
       O   O    T      T    H   H   Y Y   MM MM  O   O
       O   O    T      T    H   H    Y    M   M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
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                  *****  D E T A I L E D   O U T P U T *****


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 5.0\VO2\voin.dat
  Output  filename: C:\Users\ygollamudi\AppData\Local\Civica\VH5\10c26041-43a5-
4194-90ea-ce2e7e4124a0\1fa79e72-fcb1-4134-aa7d-fdd8247d6752\s
  Summary filename: C:\Users\ygollamudi\AppData\Local\Civica\VH5\10c26041-43a5-
4194-90ea-ce2e7e4124a0\1fa79e72-fcb1-4134-aa7d-fdd8247d6752\s


DATE: 05-07-2019                          TIME: 09:07:48

USER:
```

COMMENTS: _____

```
  ***********************************************
  ** SIMULATION : Run 05                       **
  ***********************************************
```

```
--------------------
|    READ STORM    |    Filename: C:\Users\ygollamudi\AppD
|                  |              ata\Local\Temp\
|                  |              a5c5a77e-1a97-4929-9604-cb8c0adf0517\40131cc1
| Ptotal= 82.04 mm |    Comments: 50yr
--------------------
```

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	2.03	3.25	3.05	6.25	15.24	9.25	3.05
0.50	1.02	3.50	3.05	6.50	14.22	9.50	2.03
0.75	2.03	3.75	4.06	6.75	7.11	9.75	3.05
1.00	1.02	4.00	3.05	7.00	6.10	10.00	2.03
1.25	2.03	4.25	5.08	7.25	5.08	10.25	2.03
1.50	2.03	4.50	6.10	7.50	5.08	10.50	1.02
1.75	1.02	4.75	6.10	7.75	5.08	10.75	2.03
2.00	2.03	5.00	5.08	8.00	4.06	11.00	2.03
2.25	3.05	5.25	10.16	8.25	4.06	11.25	1.02
2.50	3.05	5.50	10.16	8.50	3.05	11.50	2.03
2.75	4.06	5.75	73.15	8.75	3.05	11.75	1.02
3.00	3.05	6.00	74.17	9.00	3.05	12.00	2.03

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| CALIB            |
| NASHYD   (  0104)|   Area     (ha)=   0.99   Curve Number    (CN)= 44.0
|ID= 1 DT= 5.0 min |   Ia       (mm)=  10.00   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.12
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NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.03	3.083	3.05	6.083	15.24	9.08	3.05
0.167	2.03	3.167	3.05	6.167	15.24	9.17	3.05
0.250	2.03	3.250	3.05	6.250	15.24	9.25	3.05
0.333	1.02	3.333	3.05	6.333	14.22	9.33	2.03
0.417	1.02	3.417	3.05	6.417	14.22	9.42	2.03
0.500	1.02	3.500	3.05	6.500	14.22	9.50	2.03
0.583	2.03	3.583	4.06	6.583	7.11	9.58	3.05
0.667	2.03	3.667	4.06	6.667	7.11	9.67	3.05
0.750	2.03	3.750	4.06	6.750	7.11	9.75	3.05
0.833	1.02	3.833	3.05	6.833	6.10	9.83	2.03
0.917	1.02	3.917	3.05	6.917	6.10	9.92	2.03
1.000	1.02	4.000	3.05	7.000	6.10	10.00	2.03
1.083	2.03	4.083	5.08	7.083	5.08	10.08	2.03
1.167	2.03	4.167	5.08	7.167	5.08	10.17	2.03
1.250	2.03	4.250	5.08	7.250	5.08	10.25	2.03
1.333	2.03	4.333	6.10	7.333	5.08	10.33	1.02
1.417	2.03	4.417	6.10	7.417	5.08	10.42	1.02
1.500	2.03	4.500	6.10	7.500	5.08	10.50	1.02
1.583	1.02	4.583	6.10	7.583	5.08	10.58	2.03
1.667	1.02	4.667	6.10	7.667	5.08	10.67	2.03
1.750	1.02	4.750	6.10	7.750	5.08	10.75	2.03
1.833	2.03	4.833	5.08	7.833	4.06	10.83	2.03
1.917	2.03	4.917	5.08	7.917	4.06	10.92	2.03
2.000	2.03	5.000	5.08	8.000	4.06	11.00	2.03
2.083	3.05	5.083	10.16	8.083	4.06	11.08	1.02
2.167	3.05	5.167	10.16	8.167	4.06	11.17	1.02
2.250	3.05	5.250	10.16	8.250	4.06	11.25	1.02
2.333	3.05	5.333	10.16	8.333	3.05	11.33	2.03
2.417	3.05	5.417	10.16	8.417	3.05	11.42	2.03
2.500	3.05	5.500	10.16	8.500	3.05	11.50	2.03
2.583	4.06	5.583	73.15	8.583	3.05	11.58	1.02
2.667	4.06	5.667	73.15	8.667	3.05	11.67	1.02
2.750	4.06	5.750	73.15	8.750	3.05	11.75	1.02
2.833	3.05	5.833	74.17	8.833	3.05	11.83	2.03
2.917	3.05	5.917	74.17	8.917	3.05	11.92	2.03
3.000	3.05	6.000	74.17	9.000	3.05	12.00	2.03

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    Unit Hyd Qpeak  (cms)=   0.315

    PEAK FLOW       (cms)=   0.039 (i)
    TIME TO PEAK    (hrs)=   6.000
    RUNOFF VOLUME    (mm)=  12.953
    TOTAL RAINFALL   (mm)=  82.042
    RUNOFF COEFFICIENT   =   0.158

    (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
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|    READ STORM    |    Filename: C:\Users\ygollamudi\AppD
|                  |              ata\Local\Temp\
|                  |              a5c5a77e-1a97-4929-9604-cb8c0adf0517\40131cc1
| Ptotal= 82.04 mm |    Comments: 50yr
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TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	2.03	3.25	3.05	6.25	15.24	9.25	3.05
0.50	1.02	3.50	3.05	6.50	14.22	9.50	2.03
0.75	2.03	3.75	4.06	6.75	7.11	9.75	3.05
1.00	1.02	4.00	3.05	7.00	6.10	10.00	2.03
1.25	2.03	4.25	5.08	7.25	5.08	10.25	2.03
1.50	2.03	4.50	6.10	7.50	5.08	10.50	1.02
1.75	1.02	4.75	6.10	7.75	5.08	10.75	2.03
2.00	2.03	5.00	5.08	8.00	4.06	11.00	2.03
2.25	3.05	5.25	10.16	8.25	4.06	11.25	1.02
2.50	3.05	5.50	10.16	8.50	3.05	11.50	2.03
2.75	4.06	5.75	73.15	8.75	3.05	11.75	1.02
3.00	3.05	6.00	74.17	9.00	3.05	12.00	2.03

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| CALIB            |
| NASHYD   (  0105)|   Area     (ha)=   2.32   Curve Number    (CN)= 55.0
|ID= 1 DT= 5.0 min |   Ia       (mm)=  10.00   # of Linear Res.(N)= 3.00
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---------- U.H. Tp(hrs)= 0.12

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.03	3.083	3.05	6.083	15.24	9.08	3.05
0.167	2.03	3.167	3.05	6.167	15.24	9.17	3.05
0.250	2.03	3.250	3.05	6.250	15.24	9.25	3.05
0.333	1.02	3.333	3.05	6.333	14.22	9.33	2.03
0.417	1.02	3.417	3.05	6.417	14.22	9.42	2.03
0.500	1.02	3.500	3.05	6.500	14.22	9.50	2.03
0.583	2.03	3.583	4.06	6.583	7.11	9.58	3.05
0.667	2.03	3.667	4.06	6.667	7.11	9.67	3.05
0.750	2.03	3.750	4.06	6.750	7.11	9.75	3.05
0.833	1.02	3.833	3.05	6.833	6.10	9.83	2.03
0.917	1.02	3.917	3.05	6.917	6.10	9.92	2.03
1.000	1.02	4.000	3.05	7.000	6.10	10.00	2.03
1.083	2.03	4.083	5.08	7.083	5.08	10.08	2.03
1.167	2.03	4.167	5.08	7.167	5.08	10.17	2.03
1.250	2.03	4.250	5.08	7.250	5.08	10.25	2.03
1.333	2.03	4.333	6.10	7.333	5.08	10.33	1.02
1.417	2.03	4.417	6.10	7.417	5.08	10.42	1.02
1.500	2.03	4.500	6.10	7.500	5.08	10.50	1.02
1.583	1.02	4.583	6.10	7.583	5.08	10.58	2.03
1.667	1.02	4.667	6.10	7.667	5.08	10.67	2.03
1.750	1.02	4.750	6.10	7.750	5.08	10.75	2.03
1.833	2.03	4.833	5.08	7.833	4.06	10.83	2.03
1.917	2.03	4.917	5.08	7.917	4.06	10.92	2.03
2.000	2.03	5.000	5.08	8.000	4.06	11.00	2.03
2.083	3.05	5.083	10.16	8.083	4.06	11.08	1.02
2.167	3.05	5.167	10.16	8.167	4.06	11.17	1.02
2.250	3.05	5.250	10.16	8.250	4.06	11.25	1.02
2.333	3.05	5.333	10.16	8.333	3.05	11.33	2.03
2.417	3.05	5.417	10.16	8.417	3.05	11.42	2.03
2.500	3.05	5.500	10.16	8.500	3.05	11.50	2.03
2.583	4.06	5.583	73.15	8.583	3.05	11.58	1.02
2.667	4.06	5.667	73.15	8.667	3.05	11.67	1.02
2.750	4.06	5.750	73.15	8.750	3.05	11.75	1.02
2.833	3.05	5.833	74.17	8.833	3.05	11.83	2.03
2.917	3.05	5.917	74.17	8.917	3.05	11.92	2.03
3.000	3.05	6.000	74.17	9.000	3.05	12.00	2.03

Unit Hyd Qpeak (cms)= 0.738

PEAK FLOW (cms)= 0.130 (i)
TIME TO PEAK (hrs)= 6.000
RUNOFF VOLUME (mm)= 18.297
TOTAL RAINFALL (mm)= 82.042
RUNOFF COEFFICIENT = 0.223

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

| READ STORM | Filename: C:\Users\ygollamudi\AppData\Local\Temp\a5c5a77e-1a97-4929-9604-cb8c0adf0517\40131cc1

| Ptotal= 82.04 mm | Comments: 50yr

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	2.03	3.25	3.05	6.25	15.24	9.25	3.05
0.50	1.02	3.50	3.05	6.50	14.22	9.50	2.03
0.75	2.03	3.75	4.06	6.75	7.11	9.75	3.05
1.00	1.02	4.00	3.05	7.00	6.10	10.00	2.03
1.25	2.03	4.25	5.08	7.25	5.08	10.25	2.03
1.50	2.03	4.50	6.10	7.50	5.08	10.50	1.02
1.75	1.02	4.75	6.10	7.75	5.08	10.75	2.03
2.00	2.03	5.00	5.08	8.00	4.06	11.00	2.03
2.25	3.05	5.25	10.16	8.25	4.06	11.25	1.02
2.50	3.05	5.50	10.16	8.50	3.05	11.50	2.03
2.75	4.06	5.75	73.15	8.75	3.05	11.75	1.02
3.00	3.05	6.00	74.17	9.00	3.05	12.00	2.03

| CALIB | NASHYD (0106) | ID= 1 DT= 5.0 min | Area (ha)= 1.08 | Ia (mm)= 10.00 | U.H. Tp(hrs)= 0.12 | Curve Number (CN)= 59.0 | # of Linear Res.(N)= 3.00

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.03	3.083	3.05	6.083	15.24	9.08	3.05
0.167	2.03	3.167	3.05	6.167	15.24	9.17	3.05
0.250	2.03	3.250	3.05	6.250	15.24	9.25	3.05
0.333	1.02	3.333	3.05	6.333	14.22	9.33	2.03
0.417	1.02	3.417	3.05	6.417	14.22	9.42	2.03
0.500	1.02	3.500	3.05	6.500	14.22	9.50	2.03
0.583	2.03	3.583	4.06	6.583	7.11	9.58	3.05
0.667	2.03	3.667	4.06	6.667	7.11	9.67	3.05
0.750	2.03	3.750	4.06	6.750	7.11	9.75	3.05
0.833	1.02	3.833	3.05	6.833	6.10	9.83	2.03
0.917	1.02	3.917	3.05	6.917	6.10	9.92	2.03
1.000	1.02	4.000	3.05	7.000	6.10	10.00	2.03
1.083	2.03	4.083	5.08	7.083	5.08	10.08	2.03
1.167	2.03	4.167	5.08	7.167	5.08	10.17	2.03
1.250	2.03	4.250	5.08	7.250	5.08	10.25	2.03
1.333	2.03	4.333	6.10	7.333	5.08	10.33	1.02
1.417	2.03	4.417	6.10	7.417	5.08	10.42	1.02
1.500	2.03	4.500	6.10	7.500	5.08	10.50	1.02
1.583	1.02	4.583	6.10	7.583	5.08	10.58	2.03
1.667	1.02	4.667	6.10	7.667	5.08	10.67	2.03
1.750	1.02	4.750	6.10	7.750	5.08	10.75	2.03
1.833	2.03	4.833	5.08	7.833	4.06	10.83	2.03
1.917	2.03	4.917	5.08	7.917	4.06	10.92	2.03
2.000	2.03	5.000	5.08	8.000	4.06	11.00	2.03
2.083	3.05	5.083	10.16	8.083	4.06	11.08	1.02
2.167	3.05	5.167	10.16	8.167	4.06	11.17	1.02
2.250	3.05	5.250	10.16	8.250	4.06	11.25	1.02
2.333	3.05	5.333	10.16	8.333	3.05	11.33	2.03
2.417	3.05	5.417	10.16	8.417	3.05	11.42	2.03
2.500	3.05	5.500	10.16	8.500	3.05	11.50	2.03

2.583	4.06	5.583	73.15	8.583	3.05	11.58	1.02
2.667	4.06	5.667	73.15	8.667	3.05	11.67	1.02
2.750	4.06	5.750	73.15	8.750	3.05	11.75	1.02
2.833	3.05	5.833	74.17	8.833	3.05	11.83	2.03
2.917	3.05	5.917	74.17	8.917	3.05	11.92	2.03
3.000	3.05	6.000	74.17	9.000	3.05	12.00	2.03

Unit Hyd Qpeak (cms)= 0.343

PEAK FLOW (cms)= 0.068 (i)
TIME TO PEAK (hrs)= 6.000
RUNOFF VOLUME (mm)= 20.602
TOTAL RAINFALL (mm)= 82.042
RUNOFF COEFFICIENT = 0.251

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

READ STORM	Filename: C:\Users\ygollamudi\AppData\Local\Temp\a5c5a77e-1a97-4929-9604-cb8c0adf0517\40131cc1
Ptotal= 82.04 mm	Comments: 50yr

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	2.03	3.25	3.05	6.25	15.24	9.25	3.05
0.50	1.02	3.50	3.05	6.50	14.22	9.50	2.03
0.75	2.03	3.75	4.06	6.75	7.11	9.75	3.05
1.00	1.02	4.00	3.05	7.00	6.10	10.00	2.03
1.25	2.03	4.25	5.08	7.25	5.08	10.25	2.03
1.50	2.03	4.50	6.10	7.50	5.08	10.50	1.02
1.75	1.02	4.75	6.10	7.75	5.08	10.75	2.03
2.00	2.03	5.00	5.08	8.00	4.06	11.00	2.03
2.25	3.05	5.25	10.16	8.25	4.06	11.25	1.02
2.50	3.05	5.50	10.16	8.50	3.05	11.50	2.03
2.75	4.06	5.75	73.15	8.75	3.05	11.75	1.02
3.00	3.05	6.00	74.17	9.00	3.05	12.00	2.03

CALIB					
NASHYD (0101)	Area (ha)=	2.30	Curve Number (CN)=	55.0	
ID= 1 DT= 5.0 min	Ia (mm)=	5.00	# of Linear Res.(N)=	3.00	
	U.H. Tp(hrs)=	0.12			

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.03	3.083	3.05	6.083	15.24	9.08	3.05
0.167	2.03	3.167	3.05	6.167	15.24	9.17	3.05
0.250	2.03	3.250	3.05	6.250	15.24	9.25	3.05
0.333	1.02	3.333	3.05	6.333	14.22	9.33	2.03
0.417	1.02	3.417	3.05	6.417	14.22	9.42	2.03
0.500	1.02	3.500	3.05	6.500	14.22	9.50	2.03
0.583	2.03	3.583	4.06	6.583	7.11	9.58	3.05
0.667	2.03	3.667	4.06	6.667	7.11	9.67	3.05
0.750	2.03	3.750	4.06	6.750	7.11	9.75	3.05
0.833	1.02	3.833	3.05	6.833	6.10	9.83	2.03
0.917	1.02	3.917	3.05	6.917	6.10	9.92	2.03
1.000	1.02	4.000	3.05	7.000	6.10	10.00	2.03
1.083	2.03	4.083	5.08	7.083	5.08	10.08	2.03
1.167	2.03	4.167	5.08	7.167	5.08	10.17	2.03
1.250	2.03	4.250	5.08	7.250	5.08	10.25	2.03
1.333	2.03	4.333	6.10	7.333	5.08	10.33	1.02
1.417	2.03	4.417	6.10	7.417	5.08	10.42	1.02
1.500	2.03	4.500	6.10	7.500	5.08	10.50	1.02
1.583	1.02	4.583	6.10	7.583	5.08	10.58	2.03
1.667	1.02	4.667	6.10	7.667	5.08	10.67	2.03
1.750	1.02	4.750	6.10	7.750	5.08	10.75	2.03
1.833	2.03	4.833	5.08	7.833	4.06	10.83	2.03
1.917	2.03	4.917	5.08	7.917	4.06	10.92	2.03
2.000	2.03	5.000	5.08	8.000	4.06	11.00	2.03
2.083	3.05	5.083	10.16	8.083	4.06	11.08	1.02
2.167	3.05	5.167	10.16	8.167	4.06	11.17	1.02
2.250	3.05	5.250	10.16	8.250	4.06	11.25	1.02
2.333	3.05	5.333	10.16	8.333	3.05	11.33	2.03
2.417	3.05	5.417	10.16	8.417	3.05	11.42	2.03
2.500	3.05	5.500	10.16	8.500	3.05	11.50	2.03
2.583	4.06	5.583	73.15	8.583	3.05	11.58	1.02
2.667	4.06	5.667	73.15	8.667	3.05	11.67	1.02
2.750	4.06	5.750	73.15	8.750	3.05	11.75	1.02
2.833	3.05	5.833	74.17	8.833	3.05	11.83	2.03
2.917	3.05	5.917	74.17	8.917	3.05	11.92	2.03
3.000	3.05	6.000	74.17	9.000	3.05	12.00	2.03

Unit Hyd Qpeak (cms)= 0.732

PEAK FLOW (cms)= 0.142 (i)
TIME TO PEAK (hrs)= 6.000
RUNOFF VOLUME (mm)= 20.558
TOTAL RAINFALL (mm)= 82.042
RUNOFF COEFFICIENT = 0.251

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

READ STORM	Filename: C:\Users\ygollamudi\AppData\Local\Temp\a5c5a77e-1a97-4929-9604-cb8c0adf0517\40131cc1
Ptotal= 82.04 mm	Comments: 50yr

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	2.03	3.25	3.05	6.25	15.24	9.25	3.05
0.50	1.02	3.50	3.05	6.50	14.22	9.50	2.03
0.75	2.03	3.75	4.06	6.75	7.11	9.75	3.05
1.00	1.02	4.00	3.05	7.00	6.10	10.00	2.03
1.25	2.03	4.25	5.08	7.25	5.08	10.25	2.03
1.50	2.03	4.50	6.10	7.50	5.08	10.50	1.02
1.75	1.02	4.75	6.10	7.75	5.08	10.75	2.03
2.00	2.03	5.00	5.08	8.00	4.06	11.00	2.03
2.25	3.05	5.25	10.16	8.25	4.06	11.25	1.02
2.50	3.05	5.50	10.16	8.50	3.05	11.50	2.03
2.75	4.06	5.75	73.15	8.75	3.05	11.75	1.02

3.00	3.05	6.00	74.17	9.00	3.05	12.00	2.03

CALIB			
NASHYD (0102)	Area (ha)=	0.54	Curve Number (CN)= 44.0
ID= 1 DT= 5.0 min	Ia (mm)=	10.00	# of Linear Res.(N)= 3.00
	U.H. Tp(hrs)=	0.12	

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.03	3.083	3.05	6.083	15.24	9.08	3.05
0.167	2.03	3.167	3.05	6.167	15.24	9.17	3.05
0.250	2.03	3.250	3.05	6.250	15.24	9.25	3.05
0.333	1.02	3.333	3.05	6.333	14.22	9.33	2.03
0.417	1.02	3.417	3.05	6.417	14.22	9.42	2.03
0.500	1.02	3.500	3.05	6.500	14.22	9.50	2.03
0.583	2.03	3.583	4.06	6.583	7.11	9.58	3.05
0.667	2.03	3.667	4.06	6.667	7.11	9.67	3.05
0.750	2.03	3.750	4.06	6.750	7.11	9.75	3.05
0.833	1.02	3.833	3.05	6.833	6.10	9.83	2.03
0.917	1.02	3.917	3.05	6.917	6.10	9.92	2.03
1.000	1.02	4.000	3.05	7.000	6.10	10.00	2.03
1.083	2.03	4.083	5.08	7.083	5.08	10.08	2.03
1.167	2.03	4.167	5.08	7.167	5.08	10.17	2.03
1.250	2.03	4.250	5.08	7.250	5.08	10.25	2.03
1.333	2.03	4.333	6.10	7.333	5.08	10.33	1.02
1.417	2.03	4.417	6.10	7.417	5.08	10.42	1.02
1.500	2.03	4.500	6.10	7.500	5.08	10.50	1.02
1.583	1.02	4.583	6.10	7.583	5.08	10.58	2.03
1.667	1.02	4.667	6.10	7.667	5.08	10.67	2.03
1.750	1.02	4.750	6.10	7.750	5.08	10.75	2.03
1.833	2.03	4.833	5.08	7.833	4.06	10.83	2.03
1.917	2.03	4.917	5.08	7.917	4.06	10.92	2.03
2.000	2.03	5.000	5.08	8.000	4.06	11.00	2.03
2.083	3.05	5.083	10.16	8.083	4.06	11.08	1.02
2.167	3.05	5.167	10.16	8.167	4.06	11.17	1.02
2.250	3.05	5.250	10.16	8.250	4.06	11.25	1.02
2.333	3.05	5.333	10.16	8.333	3.05	11.33	2.03
2.417	3.05	5.417	10.16	8.417	3.05	11.42	2.03
2.500	3.05	5.500	10.16	8.500	3.05	11.50	2.03
2.583	4.06	5.583	73.15	8.583	3.05	11.58	1.02
2.667	4.06	5.667	73.15	8.667	3.05	11.67	1.02
2.750	4.06	5.750	73.15	8.750	3.05	11.75	1.02
2.833	3.05	5.833	74.17	8.833	3.05	11.83	2.03
2.917	3.05	5.917	74.17	8.917	3.05	11.92	2.03
3.000	3.05	6.000	74.17	9.000	3.05	12.00	2.03

Unit Hyd Qpeak (cms)= 0.172

PEAK FLOW (cms)= 0.021 (i)
TIME TO PEAK (hrs)= 6.000
RUNOFF VOLUME (mm)= 12.953
TOTAL RAINFALL (mm)= 82.042
RUNOFF COEFFICIENT = 0.158

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

READ STORM	Filename:	C:\Users\ygollamudi\AppData\Local\Temp\a5c5a77e-1a97-4929-9604-cb8c0adf0517\40131cc1
Ptotal= 82.04 mm	Comments:	50yr

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	2.03	3.25	3.05	6.25	15.24	9.25	3.05
0.50	1.02	3.50	3.05	6.50	14.22	9.50	2.03
0.75	2.03	3.75	4.06	6.75	7.11	9.75	3.05
1.00	1.02	4.00	3.05	7.00	6.10	10.00	2.03
1.25	2.03	4.25	5.08	7.25	5.08	10.25	2.03
1.50	2.03	4.50	6.10	7.50	5.08	10.50	1.02
1.75	1.02	4.75	6.10	7.75	5.08	10.75	2.03
2.00	2.03	5.00	5.08	8.00	4.06	11.00	2.03
2.25	3.05	5.25	10.16	8.25	4.06	11.25	1.02
2.50	3.05	5.50	10.16	8.50	3.05	11.50	2.03
2.75	4.06	5.75	73.15	8.75	3.05	11.75	1.02
3.00	3.05	6.00	74.17	9.00	3.05	12.00	2.03

CALIB			
NASHYD (0103)	Area (ha)=	0.61	Curve Number (CN)= 44.0
ID= 1 DT= 5.0 min	Ia (mm)=	10.00	# of Linear Res.(N)= 3.00
	U.H. Tp(hrs)=	0.12	

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.03	3.083	3.05	6.083	15.24	9.08	3.05
0.167	2.03	3.167	3.05	6.167	15.24	9.17	3.05
0.250	2.03	3.250	3.05	6.250	15.24	9.25	3.05
0.333	1.02	3.333	3.05	6.333	14.22	9.33	2.03
0.417	1.02	3.417	3.05	6.417	14.22	9.42	2.03
0.500	1.02	3.500	3.05	6.500	14.22	9.50	2.03
0.583	2.03	3.583	4.06	6.583	7.11	9.58	3.05
0.667	2.03	3.667	4.06	6.667	7.11	9.67	3.05
0.750	2.03	3.750	4.06	6.750	7.11	9.75	3.05
0.833	1.02	3.833	3.05	6.833	6.10	9.83	2.03
0.917	1.02	3.917	3.05	6.917	6.10	9.92	2.03
1.000	1.02	4.000	3.05	7.000	6.10	10.00	2.03
1.083	2.03	4.083	5.08	7.083	5.08	10.08	2.03
1.167	2.03	4.167	5.08	7.167	5.08	10.17	2.03
1.250	2.03	4.250	5.08	7.250	5.08	10.25	2.03
1.333	2.03	4.333	6.10	7.333	5.08	10.33	1.02
1.417	2.03	4.417	6.10	7.417	5.08	10.42	1.02
1.500	2.03	4.500	6.10	7.500	5.08	10.50	1.02
1.583	1.02	4.583	6.10	7.583	5.08	10.58	2.03
1.667	1.02	4.667	6.10	7.667	5.08	10.67	2.03
1.750	1.02	4.750	6.10	7.750	5.08	10.75	2.03
1.833	2.03	4.833	5.08	7.833	4.06	10.83	2.03

1.917	2.03	4.917	5.08	7.917	4.06	10.92	2.03
2.000	2.03	5.000	5.08	8.000	4.06	11.00	2.03
2.083	3.05	5.083	10.16	8.083	4.06	11.08	1.02
2.167	3.05	5.167	10.16	8.167	4.06	11.17	1.02
2.250	3.05	5.250	10.16	8.250	4.06	11.25	1.02
2.333	3.05	5.333	10.16	8.333	3.05	11.33	2.03
2.417	3.05	5.417	10.16	8.417	3.05	11.42	2.03
2.500	3.05	5.500	10.16	8.500	3.05	11.50	2.03
2.583	4.06	5.583	73.15	8.583	3.05	11.58	1.02
2.667	4.06	5.667	73.15	8.667	3.05	11.67	1.02
2.750	4.06	5.750	73.15	8.750	3.05	11.75	1.02
2.833	3.05	5.833	74.17	8.833	3.05	11.83	2.03
2.917	3.05	5.917	74.17	8.917	3.05	11.92	2.03
3.000	3.05	6.000	74.17	9.000	3.05	12.00	2.03

Unit Hyd Qpeak (cms)= 0.194

PEAK FLOW (cms)= 0.024 (i)
TIME TO PEAK (hrs)= 6.000
RUNOFF VOLUME (mm)= 12.953
TOTAL RAINFALL (mm)= 82.042
RUNOFF COEFFICIENT = 0.158

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

READ STORM	Filename: C:\Users\ygollamudi\AppData\Local\Temp\a5c5a77e-1a97-4929-9604-cb8c0adf0517\40131cc1
Ptotal= 82.04 mm	Comments: 50yr

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	2.03	3.25	3.05	6.25	15.24	9.25	3.05
0.50	1.02	3.50	3.05	6.50	14.22	9.50	2.03
0.75	2.03	3.75	4.06	6.75	7.11	9.75	3.05
1.00	1.02	4.00	3.05	7.00	6.10	10.00	2.03
1.25	2.03	4.25	5.08	7.25	5.08	10.25	2.03
1.50	2.03	4.50	6.10	7.50	5.08	10.50	1.02
1.75	1.02	4.75	6.10	7.75	5.08	10.75	2.03
2.00	2.03	5.00	5.08	8.00	4.06	11.00	2.03
2.25	3.05	5.25	10.16	8.25	4.06	11.25	1.02
2.50	3.05	5.50	10.16	8.50	3.05	11.50	2.03
2.75	4.06	5.75	73.15	8.75	3.05	11.75	1.02
3.00	3.05	6.00	74.17	9.00	3.05	12.00	2.03

CALIB			
NASHYD (0100)	Area (ha)= 1.17	Curve Number (CN)= 44.0	
ID= 1 DT= 5.0 min	Ia (mm)= 10.00	# of Linear Res.(N)= 3.00	
	U.H. Tp(hrs)= 0.12		

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.03	3.083	3.05	6.083	15.24	9.08	3.05
0.167	2.03	3.167	3.05	6.167	15.24	9.17	3.05
0.250	2.03	3.250	3.05	6.250	15.24	9.25	3.05
0.333	1.02	3.333	3.05	6.333	14.22	9.33	2.03
0.417	1.02	3.417	3.05	6.417	14.22	9.42	2.03
0.500	1.02	3.500	3.05	6.500	14.22	9.50	2.03
0.583	2.03	3.583	4.06	6.583	7.11	9.58	3.05
0.667	2.03	3.667	4.06	6.667	7.11	9.67	3.05
0.750	2.03	3.750	4.06	6.750	7.11	9.75	3.05
0.833	1.02	3.833	3.05	6.833	6.10	9.83	2.03
0.917	1.02	3.917	3.05	6.917	6.10	9.92	2.03
1.000	1.02	4.000	3.05	7.000	6.10	10.00	2.03
1.083	2.03	4.083	5.08	7.083	5.08	10.08	2.03
1.167	2.03	4.167	5.08	7.167	5.08	10.17	2.03
1.250	2.03	4.250	5.08	7.250	5.08	10.25	2.03
1.333	2.03	4.333	6.10	7.333	5.08	10.33	1.02
1.417	2.03	4.417	6.10	7.417	5.08	10.42	1.02
1.500	2.03	4.500	6.10	7.500	5.08	10.50	1.02
1.583	1.02	4.583	6.10	7.583	5.08	10.58	2.03
1.667	1.02	4.667	6.10	7.667	5.08	10.67	2.03
1.750	1.02	4.750	6.10	7.750	5.08	10.75	2.03
1.833	2.03	4.833	5.08	7.833	4.06	10.83	2.03
1.917	2.03	4.917	5.08	7.917	4.06	10.92	2.03
2.000	2.03	5.000	5.08	8.000	4.06	11.00	2.03
2.083	3.05	5.083	10.16	8.083	4.06	11.08	1.02
2.167	3.05	5.167	10.16	8.167	4.06	11.17	1.02
2.250	3.05	5.250	10.16	8.250	4.06	11.25	1.02
2.333	3.05	5.333	10.16	8.333	3.05	11.33	2.03
2.417	3.05	5.417	10.16	8.417	3.05	11.42	2.03
2.500	3.05	5.500	10.16	8.500	3.05	11.50	2.03
2.583	4.06	5.583	73.15	8.583	3.05	11.58	1.02
2.667	4.06	5.667	73.15	8.667	3.05	11.67	1.02
2.750	4.06	5.750	73.15	8.750	3.05	11.75	1.02
2.833	3.05	5.833	74.17	8.833	3.05	11.83	2.03
2.917	3.05	5.917	74.17	8.917	3.05	11.92	2.03
3.000	3.05	6.000	74.17	9.000	3.05	12.00	2.03

Unit Hyd Qpeak (cms)= 0.372

PEAK FLOW (cms)= 0.046 (i)
TIME TO PEAK (hrs)= 6.000
RUNOFF VOLUME (mm)= 12.953
TOTAL RAINFALL (mm)= 82.042
RUNOFF COEFFICIENT = 0.158

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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V    V   I    SSSSS  U   U    A    L
V    V   I    SS     U   U   A A   L
 V  V    I     SS    U   U  AAAAA  L
 V  V    I      SS   U   U  A   A  L
  VV     I    SSSSS  UUUUU  A   A  LLLLL

 OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
O   O    T      T    H   H   Y Y   MM MM  O   O
O   O    T      T    H   H    Y    M   M  O   O
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        OOO     T      T    H   H    Y    M   M   OOO
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                  *****  D E T A I L E D   O U T P U T *****


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 5.0\VO2\voin.dat
  Output  filename: C:\Users\ygollamudi\AppData\Local\Civica\VH5\10c26041-43a5-
4194-90ea-ce2e7e4124a0\7703a4e9-2a7c-460f-8295-6a30d027fc90\s
  Summary filename: C:\Users\ygollamudi\AppData\Local\Civica\VH5\10c26041-43a5-
4194-90ea-ce2e7e4124a0\7703a4e9-2a7c-460f-8295-6a30d027fc90\s


DATE: 05-07-2019                          TIME: 09:07:48

USER:



COMMENTS: _____________________________________________________


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  ***********************************************
  ** SIMULATION : Run 06                       **
  ***********************************************


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|    READ STORM    |    Filename: C:\Users\ygollamudi\AppD
|                  |              ata\Local\Temp\
|                  |              a5c5a77e-1a97-4929-9604-cb8c0adf0517\07688420
| Ptotal= 89.92 mm |    Comments: 100yr
--------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.25    2.03 |  3.25    4.06 |  6.25   16.26 |  9.25    3.05
                0.50    2.03 |  3.50    3.05 |  6.50   16.26 |  9.50    3.05
                0.75    1.02 |  3.75    4.06 |  6.75    7.11 |  9.75    2.03
                1.00    2.03 |  4.00    3.05 |  7.00    7.11 | 10.00    3.05
                1.25    2.03 |  4.25    7.11 |  7.25    5.08 | 10.25    2.03
                1.50    2.03 |  4.50    6.10 |  7.50    5.08 | 10.50    1.02
                1.75    1.02 |  4.75    6.10 |  7.75    6.10 | 10.75    2.03
                2.00    2.03 |  5.00    6.10 |  8.00    5.08 | 11.00    2.03
                2.25    4.06 |  5.25   11.18 |  8.25    4.06 | 11.25    2.03
                2.50    3.05 |  5.50   11.18 |  8.50    3.05 | 11.50    1.02
                2.75    4.06 |  5.75   80.26 |  8.75    4.06 | 11.75    2.03
                3.00    3.05 |  6.00   81.28 |  9.00    3.05 | 12.00    2.03

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| CALIB            |
| NASHYD   (  0104)|   Area    (ha)=   0.99   Curve Number    (CN)= 44.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=  10.00   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.12

NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                        ---- TRANSFORMED HYETOGRAPH ----
                 TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                  hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.083    2.03 | 3.083    4.06 | 6.083   16.26 |  9.08    3.05
                0.167    2.03 | 3.167    4.06 | 6.167   16.26 |  9.17    3.05
                0.250    2.03 | 3.250    4.06 | 6.250   16.26 |  9.25    3.05
                0.333    2.03 | 3.333    3.05 | 6.333   16.26 |  9.33    3.05
                0.417    2.03 | 3.417    3.05 | 6.417   16.26 |  9.42    3.05
                0.500    2.03 | 3.500    3.05 | 6.500   16.26 |  9.50    3.05
                0.583    1.02 | 3.583    4.06 | 6.583    7.11 |  9.58    2.03
                0.667    1.02 | 3.667    4.06 | 6.667    7.11 |  9.67    2.03
                0.750    1.02 | 3.750    4.06 | 6.750    7.11 |  9.75    2.03
                0.833    2.03 | 3.833    3.05 | 6.833    7.11 |  9.83    3.05
                0.917    2.03 | 3.917    3.05 | 6.917    7.11 |  9.92    3.05
                1.000    2.03 | 4.000    3.05 | 7.000    7.11 | 10.00    3.05
                1.083    2.03 | 4.083    7.11 | 7.083    5.08 | 10.08    2.03
                1.167    2.03 | 4.167    7.11 | 7.167    5.08 | 10.17    2.03
                1.250    2.03 | 4.250    7.11 | 7.250    5.08 | 10.25    2.03
                1.333    2.03 | 4.333    6.10 | 7.333    5.08 | 10.33    1.02
                1.417    2.03 | 4.417    6.10 | 7.417    5.08 | 10.42    1.02
                1.500    2.03 | 4.500    6.10 | 7.500    5.08 | 10.50    1.02
                1.583    1.02 | 4.583    6.10 | 7.583    6.10 | 10.58    2.03
                1.667    1.02 | 4.667    6.10 | 7.667    6.10 | 10.67    2.03
                1.750    1.02 | 4.750    6.10 | 7.750    6.10 | 10.75    2.03
                1.833    2.03 | 4.833    6.10 | 7.833    5.08 | 10.83    2.03
                1.917    2.03 | 4.917    6.10 | 7.917    5.08 | 10.92    2.03
                2.000    2.03 | 5.000    6.10 | 8.000    5.08 | 11.00    2.03
                2.083    4.06 | 5.083   11.18 | 8.083    4.06 | 11.08    2.03
                2.167    4.06 | 5.167   11.18 | 8.167    4.06 | 11.17    2.03
                2.250    4.06 | 5.250   11.18 | 8.250    4.06 | 11.25    2.03
                2.333    3.05 | 5.333   11.18 | 8.333    3.05 | 11.33    1.02
                2.417    3.05 | 5.417   11.18 | 8.417    3.05 | 11.42    1.02
                2.500    3.05 | 5.500   11.18 | 8.500    3.05 | 11.50    1.02
                2.583    4.06 | 5.583   80.26 | 8.583    4.06 | 11.58    2.03
                2.667    4.06 | 5.667   80.26 | 8.667    4.06 | 11.67    2.03
                2.750    4.06 | 5.750   80.26 | 8.750    4.06 | 11.75    2.03
                2.833    3.05 | 5.833   81.28 | 8.833    3.05 | 11.83    2.03
                2.917    3.05 | 5.917   81.28 | 8.917    3.05 | 11.92    2.03
                3.000    3.05 | 6.000   81.28 | 9.000    3.05 | 12.00    2.03

    Unit Hyd Qpeak  (cms)=   0.315

    PEAK FLOW       (cms)=   0.047 (i)
    TIME TO PEAK    (hrs)=   6.000
    RUNOFF VOLUME    (mm)=  15.628
    TOTAL RAINFALL   (mm)=  89.916
    RUNOFF COEFFICIENT   =   0.174

    (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------

--------------------
|    READ STORM    |    Filename: C:\Users\ygollamudi\AppD
|                  |              ata\Local\Temp\
|                  |              a5c5a77e-1a97-4929-9604-cb8c0adf0517\07688420
| Ptotal= 89.92 mm |    Comments: 100yr
--------------------
```

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	2.03	3.25	4.06	6.25	16.26	9.25	3.05
0.50	2.03	3.50	3.05	6.50	16.26	9.50	3.05
0.75	1.02	3.75	4.06	6.75	7.11	9.75	2.03
1.00	2.03	4.00	3.05	7.00	7.11	10.00	3.05
1.25	2.03	4.25	7.11	7.25	5.08	10.25	2.03
1.50	2.03	4.50	6.10	7.50	5.08	10.50	1.02
1.75	1.02	4.75	6.10	7.75	6.10	10.75	2.03
2.00	2.03	5.00	6.10	8.00	5.08	11.00	2.03
2.25	4.06	5.25	11.18	8.25	4.06	11.25	2.03
2.50	3.05	5.50	11.18	8.50	3.05	11.50	1.02
2.75	4.06	5.75	80.26	8.75	4.06	11.75	2.03
3.00	3.05	6.00	81.28	9.00	3.05	12.00	2.03

CALIB	
NASHYD (0105)	Area (ha)= 2.32 Curve Number (CN)= 55.0
ID= 1 DT= 5.0 min	Ia (mm)= 10.00 # of Linear Res.(N)= 3.00
	U.H. Tp(hrs)= 0.12

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.03	3.083	4.06	6.083	16.26	9.08	3.05
0.167	2.03	3.167	4.06	6.167	16.26	9.17	3.05
0.250	2.03	3.250	4.06	6.250	16.26	9.25	3.05
0.333	2.03	3.333	3.05	6.333	16.26	9.33	3.05
0.417	2.03	3.417	3.05	6.417	16.26	9.42	3.05
0.500	2.03	3.500	3.05	6.500	16.26	9.50	3.05
0.583	1.02	3.583	4.06	6.583	7.11	9.58	2.03
0.667	1.02	3.667	4.06	6.667	7.11	9.67	2.03
0.750	1.02	3.750	4.06	6.750	7.11	9.75	2.03
0.833	2.03	3.833	3.05	6.833	7.11	9.83	3.05
0.917	2.03	3.917	3.05	6.917	7.11	9.92	3.05
1.000	2.03	4.000	3.05	7.000	7.11	10.00	3.05
1.083	2.03	4.083	7.11	7.083	5.08	10.08	2.03
1.167	2.03	4.167	7.11	7.167	5.08	10.17	2.03
1.250	2.03	4.250	7.11	7.250	5.08	10.25	2.03
1.333	2.03	4.333	6.10	7.333	5.08	10.33	1.02
1.417	2.03	4.417	6.10	7.417	5.08	10.42	1.02
1.500	2.03	4.500	6.10	7.500	5.08	10.50	1.02
1.583	1.02	4.583	6.10	7.583	6.10	10.58	2.03
1.667	1.02	4.667	6.10	7.667	6.10	10.67	2.03
1.750	1.02	4.750	6.10	7.750	6.10	10.75	2.03
1.833	2.03	4.833	6.10	7.833	5.08	10.83	2.03
1.917	2.03	4.917	6.10	7.917	5.08	10.92	2.03
2.000	2.03	5.000	6.10	8.000	5.08	11.00	2.03
2.083	4.06	5.083	11.18	8.083	4.06	11.08	2.03
2.167	4.06	5.167	11.18	8.167	4.06	11.17	2.03
2.250	4.06	5.250	11.18	8.250	4.06	11.25	2.03
2.333	3.05	5.333	11.18	8.333	3.05	11.33	1.02
2.417	3.05	5.417	11.18	8.417	3.05	11.42	1.02
2.500	3.05	5.500	11.18	8.500	3.05	11.50	1.02
2.583	4.06	5.583	80.26	8.583	4.06	11.58	2.03
2.667	4.06	5.667	80.26	8.667	4.06	11.67	2.03
2.750	4.06	5.750	80.26	8.750	4.06	11.75	2.03
2.833	3.05	5.833	81.28	8.833	3.05	11.83	2.03
2.917	3.05	5.917	81.28	8.917	3.05	11.92	2.03
3.000	3.05	6.000	81.28	9.000	3.05	12.00	2.03

Unit Hyd Qpeak (cms)= 0.738

PEAK FLOW (cms)= 0.156 (i)
TIME TO PEAK (hrs)= 6.000
RUNOFF VOLUME (mm)= 21.900
TOTAL RAINFALL (mm)= 89.916
RUNOFF COEFFICIENT = 0.244

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

READ STORM	Filename: C:\Users\ygollamudi\AppData\Local\Temp\a5c5a77e-1a97-4929-9604-cb8c0adf0517\07688420
Ptotal= 89.92 mm	Comments: 100yr

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	2.03	3.25	4.06	6.25	16.26	9.25	3.05
0.50	2.03	3.50	3.05	6.50	16.26	9.50	3.05
0.75	1.02	3.75	4.06	6.75	7.11	9.75	2.03
1.00	2.03	4.00	3.05	7.00	7.11	10.00	3.05
1.25	2.03	4.25	7.11	7.25	5.08	10.25	2.03
1.50	2.03	4.50	6.10	7.50	5.08	10.50	1.02
1.75	1.02	4.75	6.10	7.75	6.10	10.75	2.03
2.00	2.03	5.00	6.10	8.00	5.08	11.00	2.03
2.25	4.06	5.25	11.18	8.25	4.06	11.25	2.03
2.50	3.05	5.50	11.18	8.50	3.05	11.50	1.02
2.75	4.06	5.75	80.26	8.75	4.06	11.75	2.03
3.00	3.05	6.00	81.28	9.00	3.05	12.00	2.03

CALIB	
NASHYD (0106)	Area (ha)= 1.08 Curve Number (CN)= 59.0
ID= 1 DT= 5.0 min	Ia (mm)= 10.00 # of Linear Res.(N)= 3.00
	U.H. Tp(hrs)= 0.12

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.03	3.083	4.06	6.083	16.26	9.08	3.05
0.167	2.03	3.167	4.06	6.167	16.26	9.17	3.05
0.250	2.03	3.250	4.06	6.250	16.26	9.25	3.05
0.333	2.03	3.333	3.05	6.333	16.26	9.33	3.05
0.417	2.03	3.417	3.05	6.417	16.26	9.42	3.05
0.500	2.03	3.500	3.05	6.500	16.26	9.50	3.05
0.583	1.02	3.583	4.06	6.583	7.11	9.58	2.03
0.667	1.02	3.667	4.06	6.667	7.11	9.67	2.03
0.750	1.02	3.750	4.06	6.750	7.11	9.75	2.03

0.833	2.03	3.833	3.05	6.833	7.11	9.83	3.05
0.917	2.03	3.917	3.05	6.917	7.11	9.92	3.05
1.000	2.03	4.000	3.05	7.000	7.11	10.00	3.05
1.083	2.03	4.083	7.11	7.083	5.08	10.08	2.03
1.167	2.03	4.167	7.11	7.167	5.08	10.17	2.03
1.250	2.03	4.250	7.11	7.250	5.08	10.25	2.03
1.333	2.03	4.333	6.10	7.333	5.08	10.33	1.02
1.417	2.03	4.417	6.10	7.417	5.08	10.42	1.02
1.500	2.03	4.500	6.10	7.500	5.08	10.50	1.02
1.583	1.02	4.583	6.10	7.583	6.10	10.58	2.03
1.667	1.02	4.667	6.10	7.667	6.10	10.67	2.03
1.750	1.02	4.750	6.10	7.750	6.10	10.75	2.03
1.833	2.03	4.833	6.10	7.833	5.08	10.83	2.03
1.917	2.03	4.917	6.10	7.917	5.08	10.92	2.03
2.000	2.03	5.000	6.10	8.000	5.08	11.00	2.03
2.083	4.06	5.083	11.18	8.083	4.06	11.08	2.03
2.167	4.06	5.167	11.18	8.167	4.06	11.17	2.03
2.250	4.06	5.250	11.18	8.250	4.06	11.25	2.03
2.333	3.05	5.333	11.18	8.333	3.05	11.33	1.02
2.417	3.05	5.417	11.18	8.417	3.05	11.42	1.02
2.500	3.05	5.500	11.18	8.500	3.05	11.50	1.02
2.583	4.06	5.583	80.26	8.583	4.06	11.58	2.03
2.667	4.06	5.667	80.26	8.667	4.06	11.67	2.03
2.750	4.06	5.750	80.26	8.750	4.06	11.75	2.03
2.833	3.05	5.833	81.28	8.833	3.05	11.83	2.03
2.917	3.05	5.917	81.28	8.917	3.05	11.92	2.03
3.000	3.05	6.000	81.28	9.000	3.05	12.00	2.03

Unit Hyd Qpeak (cms)= 0.343

PEAK FLOW (cms)= 0.082 (i)
TIME TO PEAK (hrs)= 6.000
RUNOFF VOLUME (mm)= 24.573
TOTAL RAINFALL (mm)= 89.916
RUNOFF COEFFICIENT = 0.273

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

READ STORM	Filename: C:\Users\ygollamudi\AppData\Local\Temp\a5c5a77e-1a97-4929-9604-cb8c0adf0517\07688420
Ptotal= 89.92 mm	Comments: 100yr

TIME (hrs)	RAIN (mm/hr)	TIME (hrs)	RAIN (mm/hr)	TIME (hrs)	RAIN (mm/hr)	TIME (hrs)	RAIN (mm/hr)
0.25	2.03	3.25	4.06	6.25	16.26	9.25	3.05
0.50	2.03	3.50	3.05	6.50	16.26	9.50	3.05
0.75	1.02	3.75	4.06	6.75	7.11	9.75	2.03
1.00	2.03	4.00	3.05	7.00	7.11	10.00	3.05
1.25	2.03	4.25	7.11	7.25	5.08	10.25	2.03
1.50	2.03	4.50	6.10	7.50	5.08	10.50	1.02
1.75	1.02	4.75	6.10	7.75	6.10	10.75	2.03
2.00	2.03	5.00	6.10	8.00	5.08	11.00	2.03
2.25	4.06	5.25	11.18	8.25	4.06	11.25	2.03
2.50	3.05	5.50	11.18	8.50	3.05	11.50	1.02
2.75	4.06	5.75	80.26	8.75	4.06	11.75	2.03
3.00	3.05	6.00	81.28	9.00	3.05	12.00	2.03

CALIB NASHYD (0101) ID= 1 DT= 5.0 min	Area (ha)= 2.30 Curve Number (CN)= 55.0 Ia (mm)= 5.00 # of Linear Res.(N)= 3.00 U.H. Tp(hrs)= 0.12

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME (hrs)	RAIN (mm/hr)	TIME (hrs)	RAIN (mm/hr)	TIME (hrs)	RAIN (mm/hr)	TIME (hrs)	RAIN (mm/hr)
0.083	2.03	3.083	4.06	6.083	16.26	9.08	3.05
0.167	2.03	3.167	4.06	6.167	16.26	9.17	3.05
0.250	2.03	3.250	4.06	6.250	16.26	9.25	3.05
0.333	2.03	3.333	3.05	6.333	16.26	9.33	3.05
0.417	2.03	3.417	3.05	6.417	16.26	9.42	3.05
0.500	2.03	3.500	3.05	6.500	16.26	9.50	3.05
0.583	1.02	3.583	4.06	6.583	7.11	9.58	2.03
0.667	1.02	3.667	4.06	6.667	7.11	9.67	2.03
0.750	1.02	3.750	4.06	6.750	7.11	9.75	2.03
0.833	2.03	3.833	3.05	6.833	7.11	9.83	3.05
0.917	2.03	3.917	3.05	6.917	7.11	9.92	3.05
1.000	2.03	4.000	3.05	7.000	7.11	10.00	3.05
1.083	2.03	4.083	7.11	7.083	5.08	10.08	2.03
1.167	2.03	4.167	7.11	7.167	5.08	10.17	2.03
1.250	2.03	4.250	7.11	7.250	5.08	10.25	2.03
1.333	2.03	4.333	6.10	7.333	5.08	10.33	1.02
1.417	2.03	4.417	6.10	7.417	5.08	10.42	1.02
1.500	2.03	4.500	6.10	7.500	5.08	10.50	1.02
1.583	1.02	4.583	6.10	7.583	6.10	10.58	2.03
1.667	1.02	4.667	6.10	7.667	6.10	10.67	2.03
1.750	1.02	4.750	6.10	7.750	6.10	10.75	2.03
1.833	2.03	4.833	6.10	7.833	5.08	10.83	2.03
1.917	2.03	4.917	6.10	7.917	5.08	10.92	2.03
2.000	2.03	5.000	6.10	8.000	5.08	11.00	2.03
2.083	4.06	5.083	11.18	8.083	4.06	11.08	2.03
2.167	4.06	5.167	11.18	8.167	4.06	11.17	2.03
2.250	4.06	5.250	11.18	8.250	4.06	11.25	2.03
2.333	3.05	5.333	11.18	8.333	3.05	11.33	1.02
2.417	3.05	5.417	11.18	8.417	3.05	11.42	1.02
2.500	3.05	5.500	11.18	8.500	3.05	11.50	1.02
2.583	4.06	5.583	80.26	8.583	4.06	11.58	2.03
2.667	4.06	5.667	80.26	8.667	4.06	11.67	2.03
2.750	4.06	5.750	80.26	8.750	4.06	11.75	2.03
2.833	3.05	5.833	81.28	8.833	3.05	11.83	2.03
2.917	3.05	5.917	81.28	8.917	3.05	11.92	2.03
3.000	3.05	6.000	81.28	9.000	3.05	12.00	2.03

Unit Hyd Qpeak (cms)= 0.732

PEAK FLOW (cms)= 0.169 (i)
TIME TO PEAK (hrs)= 6.000
RUNOFF VOLUME (mm)= 24.303
TOTAL RAINFALL (mm)= 89.916
RUNOFF COEFFICIENT = 0.270

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

```
|    READ STORM    |    Filename: C:\Users\ygollamudi\AppD
|                  |              ata\Local\Temp\
|                  |              a5c5a77e-1a97-4929-9604-cb8c0adf0517\07688420
| Ptotal= 89.92 mm |    Comments: 100yr
```

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	2.03	3.25	4.06	6.25	16.26	9.25	3.05
0.50	2.03	3.50	3.05	6.50	16.26	9.50	3.05
0.75	1.02	3.75	4.06	6.75	7.11	9.75	2.03
1.00	2.03	4.00	3.05	7.00	7.11	10.00	3.05
1.25	2.03	4.25	7.11	7.25	5.08	10.25	2.03
1.50	2.03	4.50	6.10	7.50	5.08	10.50	1.02
1.75	1.02	4.75	6.10	7.75	6.10	10.75	2.03
2.00	2.03	5.00	6.10	8.00	5.08	11.00	2.03
2.25	4.06	5.25	11.18	8.25	4.06	11.25	2.03
2.50	3.05	5.50	11.18	8.50	3.05	11.50	1.02
2.75	4.06	5.75	80.26	8.75	4.06	11.75	2.03
3.00	3.05	6.00	81.28	9.00	3.05	12.00	2.03

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| CALIB            |
| NASHYD   (  0102)|   Area     (ha)=   0.54   Curve Number    (CN)= 44.0
|ID= 1 DT= 5.0 min |   Ia       (mm)=  10.00   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.12
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NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.03	3.083	4.06	6.083	16.26	9.08	3.05
0.167	2.03	3.167	4.06	6.167	16.26	9.17	3.05
0.250	2.03	3.250	4.06	6.250	16.26	9.25	3.05
0.333	2.03	3.333	3.05	6.333	16.26	9.33	3.05
0.417	2.03	3.417	3.05	6.417	16.26	9.42	3.05
0.500	2.03	3.500	3.05	6.500	16.26	9.50	3.05
0.583	1.02	3.583	4.06	6.583	7.11	9.58	2.03
0.667	1.02	3.667	4.06	6.667	7.11	9.67	2.03
0.750	1.02	3.750	4.06	6.750	7.11	9.75	2.03
0.833	2.03	3.833	3.05	6.833	7.11	9.83	3.05
0.917	2.03	3.917	3.05	6.917	7.11	9.92	3.05
1.000	2.03	4.000	3.05	7.000	7.11	10.00	3.05
1.083	2.03	4.083	7.11	7.083	5.08	10.08	2.03
1.167	2.03	4.167	7.11	7.167	5.08	10.17	2.03
1.250	2.03	4.250	7.11	7.250	5.08	10.25	2.03
1.333	2.03	4.333	6.10	7.333	5.08	10.33	1.02
1.417	2.03	4.417	6.10	7.417	5.08	10.42	1.02
1.500	2.03	4.500	6.10	7.500	5.08	10.50	1.02
1.583	1.02	4.583	6.10	7.583	6.10	10.58	2.03
1.667	1.02	4.667	6.10	7.667	6.10	10.67	2.03
1.750	1.02	4.750	6.10	7.750	6.10	10.75	2.03
1.833	2.03	4.833	6.10	7.833	5.08	10.83	2.03
1.917	2.03	4.917	6.10	7.917	5.08	10.92	2.03
2.000	2.03	5.000	6.10	8.000	5.08	11.00	2.03
2.083	4.06	5.083	11.18	8.083	4.06	11.08	2.03
2.167	4.06	5.167	11.18	8.167	4.06	11.17	2.03
2.250	4.06	5.250	11.18	8.250	4.06	11.25	2.03
2.333	3.05	5.333	11.18	8.333	3.05	11.33	1.02
2.417	3.05	5.417	11.18	8.417	3.05	11.42	1.02
2.500	3.05	5.500	11.18	8.500	3.05	11.50	1.02
2.583	4.06	5.583	80.26	8.583	4.06	11.58	2.03
2.667	4.06	5.667	80.26	8.667	4.06	11.67	2.03
2.750	4.06	5.750	80.26	8.750	4.06	11.75	2.03
2.833	3.05	5.833	81.28	8.833	3.05	11.83	2.03
2.917	3.05	5.917	81.28	8.917	3.05	11.92	2.03
3.000	3.05	6.000	81.28	9.000	3.05	12.00	2.03

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Unit Hyd Qpeak  (cms)=   0.172

PEAK FLOW       (cms)=   0.026 (i)
TIME TO PEAK    (hrs)=   6.000
RUNOFF VOLUME    (mm)=  15.628
TOTAL RAINFALL   (mm)=  89.916
RUNOFF COEFFICIENT   =   0.174

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
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```
|    READ STORM    |    Filename: C:\Users\ygollamudi\AppD
|                  |              ata\Local\Temp\
|                  |              a5c5a77e-1a97-4929-9604-cb8c0adf0517\07688420
| Ptotal= 89.92 mm |    Comments: 100yr
```

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	2.03	3.25	4.06	6.25	16.26	9.25	3.05
0.50	2.03	3.50	3.05	6.50	16.26	9.50	3.05
0.75	1.02	3.75	4.06	6.75	7.11	9.75	2.03
1.00	2.03	4.00	3.05	7.00	7.11	10.00	3.05
1.25	2.03	4.25	7.11	7.25	5.08	10.25	2.03
1.50	2.03	4.50	6.10	7.50	5.08	10.50	1.02
1.75	1.02	4.75	6.10	7.75	6.10	10.75	2.03
2.00	2.03	5.00	6.10	8.00	5.08	11.00	2.03
2.25	4.06	5.25	11.18	8.25	4.06	11.25	2.03
2.50	3.05	5.50	11.18	8.50	3.05	11.50	1.02
2.75	4.06	5.75	80.26	8.75	4.06	11.75	2.03
3.00	3.05	6.00	81.28	9.00	3.05	12.00	2.03

```
| CALIB            |
| NASHYD   (  0103)|   Area     (ha)=   0.61   Curve Number    (CN)= 44.0
|ID= 1 DT= 5.0 min |   Ia       (mm)=  10.00   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.12
```

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.03	3.083	4.06	6.083	16.26	9.08	3.05

0.167	2.03	3.167	4.06	6.167	16.26	9.17	3.05
0.250	2.03	3.250	4.06	6.250	16.26	9.25	3.05
0.333	2.03	3.333	3.05	6.333	16.26	9.33	3.05
0.417	2.03	3.417	3.05	6.417	16.26	9.42	3.05
0.500	2.03	3.500	3.05	6.500	16.26	9.50	3.05
0.583	1.02	3.583	4.06	6.583	7.11	9.58	2.03
0.667	1.02	3.667	4.06	6.667	7.11	9.67	2.03
0.750	1.02	3.750	4.06	6.750	7.11	9.75	2.03
0.833	2.03	3.833	3.05	6.833	7.11	9.83	3.05
0.917	2.03	3.917	3.05	6.917	7.11	9.92	3.05
1.000	2.03	4.000	3.05	7.000	7.11	10.00	3.05
1.083	2.03	4.083	7.11	7.083	5.08	10.08	2.03
1.167	2.03	4.167	7.11	7.167	5.08	10.17	2.03
1.250	2.03	4.250	7.11	7.250	5.08	10.25	2.03
1.333	2.03	4.333	6.10	7.333	5.08	10.33	1.02
1.417	2.03	4.417	6.10	7.417	5.08	10.42	1.02
1.500	2.03	4.500	6.10	7.500	5.08	10.50	1.02
1.583	1.02	4.583	6.10	7.583	6.10	10.58	2.03
1.667	1.02	4.667	6.10	7.667	6.10	10.67	2.03
1.750	1.02	4.750	6.10	7.750	6.10	10.75	2.03
1.833	2.03	4.833	6.10	7.833	5.08	10.83	2.03
1.917	2.03	4.917	6.10	7.917	5.08	10.92	2.03
2.000	2.03	5.000	6.10	8.000	5.08	11.00	2.03
2.083	4.06	5.083	11.18	8.083	4.06	11.08	2.03
2.167	4.06	5.167	11.18	8.167	4.06	11.17	2.03
2.250	4.06	5.250	11.18	8.250	4.06	11.25	2.03
2.333	3.05	5.333	11.18	8.333	3.05	11.33	1.02
2.417	3.05	5.417	11.18	8.417	3.05	11.42	1.02
2.500	3.05	5.500	11.18	8.500	3.05	11.50	1.02
2.583	4.06	5.583	80.26	8.583	4.06	11.58	2.03
2.667	4.06	5.667	80.26	8.667	4.06	11.67	2.03
2.750	4.06	5.750	80.26	8.750	4.06	11.75	2.03
2.833	3.05	5.833	81.28	8.833	3.05	11.83	2.03
2.917	3.05	5.917	81.28	8.917	3.05	11.92	2.03
3.000	3.05	6.000	81.28	9.000	3.05	12.00	2.03

Unit Hyd Qpeak (cms)= 0.194

PEAK FLOW (cms)= 0.029 (i)
TIME TO PEAK (hrs)= 6.000
RUNOFF VOLUME (mm)= 15.628
TOTAL RAINFALL (mm)= 89.916
RUNOFF COEFFICIENT = 0.174

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

READ STORM	Filename: C:\Users\ygollamudi\AppData\Local\Temp\a5c5a77e-1a97-4929-9604-cb8c0adf0517\07688420
Ptotal= 89.92 mm	Comments: 100yr

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	2.03	3.25	4.06	6.25	16.26	9.25	3.05
0.50	2.03	3.50	3.05	6.50	16.26	9.50	3.05
0.75	1.02	3.75	4.06	6.75	7.11	9.75	2.03
1.00	2.03	4.00	3.05	7.00	7.11	10.00	3.05
1.25	2.03	4.25	7.11	7.25	5.08	10.25	2.03
1.50	2.03	4.50	6.10	7.50	5.08	10.50	1.02
1.75	1.02	4.75	6.10	7.75	6.10	10.75	2.03
2.00	2.03	5.00	6.10	8.00	5.08	11.00	2.03
2.25	4.06	5.25	11.18	8.25	4.06	11.25	2.03
2.50	3.05	5.50	11.18	8.50	3.05	11.50	1.02
2.75	4.06	5.75	80.26	8.75	4.06	11.75	2.03
3.00	3.05	6.00	81.28	9.00	3.05	12.00	2.03

CALIB			
NASHYD (0100)	Area (ha)= 1.17	Curve Number (CN)= 44.0	
ID= 1 DT= 5.0 min	Ia (mm)= 10.00	# of Linear Res.(N)= 3.00	
	U.H. Tp(hrs)= 0.12		

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.03	3.083	4.06	6.083	16.26	9.08	3.05
0.167	2.03	3.167	4.06	6.167	16.26	9.17	3.05
0.250	2.03	3.250	4.06	6.250	16.26	9.25	3.05
0.333	2.03	3.333	3.05	6.333	16.26	9.33	3.05
0.417	2.03	3.417	3.05	6.417	16.26	9.42	3.05
0.500	2.03	3.500	3.05	6.500	16.26	9.50	3.05
0.583	1.02	3.583	4.06	6.583	7.11	9.58	2.03
0.667	1.02	3.667	4.06	6.667	7.11	9.67	2.03
0.750	1.02	3.750	4.06	6.750	7.11	9.75	2.03
0.833	2.03	3.833	3.05	6.833	7.11	9.83	3.05
0.917	2.03	3.917	3.05	6.917	7.11	9.92	3.05
1.000	2.03	4.000	3.05	7.000	7.11	10.00	3.05
1.083	2.03	4.083	7.11	7.083	5.08	10.08	2.03
1.167	2.03	4.167	7.11	7.167	5.08	10.17	2.03
1.250	2.03	4.250	7.11	7.250	5.08	10.25	2.03
1.333	2.03	4.333	6.10	7.333	5.08	10.33	1.02
1.417	2.03	4.417	6.10	7.417	5.08	10.42	1.02
1.500	2.03	4.500	6.10	7.500	5.08	10.50	1.02
1.583	1.02	4.583	6.10	7.583	6.10	10.58	2.03
1.667	1.02	4.667	6.10	7.667	6.10	10.67	2.03
1.750	1.02	4.750	6.10	7.750	6.10	10.75	2.03
1.833	2.03	4.833	6.10	7.833	5.08	10.83	2.03
1.917	2.03	4.917	6.10	7.917	5.08	10.92	2.03
2.000	2.03	5.000	6.10	8.000	5.08	11.00	2.03
2.083	4.06	5.083	11.18	8.083	4.06	11.08	2.03
2.167	4.06	5.167	11.18	8.167	4.06	11.17	2.03
2.250	4.06	5.250	11.18	8.250	4.06	11.25	2.03
2.333	3.05	5.333	11.18	8.333	3.05	11.33	1.02
2.417	3.05	5.417	11.18	8.417	3.05	11.42	1.02
2.500	3.05	5.500	11.18	8.500	3.05	11.50	1.02
2.583	4.06	5.583	80.26	8.583	4.06	11.58	2.03
2.667	4.06	5.667	80.26	8.667	4.06	11.67	2.03
2.750	4.06	5.750	80.26	8.750	4.06	11.75	2.03
2.833	3.05	5.833	81.28	8.833	3.05	11.83	2.03
2.917	3.05	5.917	81.28	8.917	3.05	11.92	2.03
3.000	3.05	6.000	81.28	9.000	3.05	12.00	2.03

Unit Hyd Qpeak (cms)= 0.372

```
     PEAK FLOW       (cms)=   0.056 (i)
     TIME TO PEAK    (hrs)=   6.000
     RUNOFF VOLUME    (mm)=  15.628
     TOTAL RAINFALL   (mm)=  89.916
     RUNOFF COEFFICIENT   =   0.174

     (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
```

SCHAEFFERS
CONSULTING ENGINEERS

Visual OTTHYMO™ Schematic

POST-DEVELOPMENT
(SCSII DESIGN STORM)

Job #: 4339	**Date: August 2019**

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================================================================================
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      V    V   I    SSSSS  U   U    A    L
      V    V   I    SS     U   U   A A   L
       V  V    I     SS    U   U  AAAAA  L
       V  V    I      SS   U   U  A   A  L
        VV     I    SSSSS  UUUUU  A   A  LLLLL

       OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
      O   O    T      T    H   H   Y Y   MM MM  O   O
      O   O    T      T    H   H    Y    M   M  O   O
       OOO     T      T    H   H    Y    M   M   OOO
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                *****  D E T A I L E D   O U T P U T *****


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 5.0\VO2\voin.dat
  Output  filename: C:\Users\ygollamudi\AppData\Local\Civica\VH5\10c26041-43a5-
4194-90ea-ce2e7e4124a0\bb7b402e-e505-4106-9558-ab3fca466cd7\s
  Summary filename: C:\Users\ygollamudi\AppData\Local\Civica\VH5\10c26041-43a5-
4194-90ea-ce2e7e4124a0\bb7b402e-e505-4106-9558-ab3fca466cd7\s


DATE: 08-28-2019                          TIME: 04:19:44

USER:



COMMENTS: _____________________________________________________________


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  ********************************************
  ** SIMULATION : Run 01                     **
  ********************************************



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|    READ STORM    |    Filename: C:\Users\ygollamudi\AppD
|                  |              ata\Local\Temp\
|                  |              e88bcada-d938-48ee-986c-873dd4f72d8d\185de9d9
| Ptotal= 42.93 mm |    Comments: 2yr
--------------------
```

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	1.02	3.25	1.02	6.25	8.13	9.25	1.02
0.50	1.02	3.50	2.03	6.50	8.13	9.50	2.03
0.75	1.02	3.75	2.03	6.75	3.05	9.75	1.02
1.00	0.00	4.00	1.02	7.00	3.05	10.00	1.02
1.25	1.02	4.25	3.05	7.25	3.05	10.25	1.02
1.50	1.02	4.50	3.05	7.50	2.03	10.50	1.02
1.75	1.02	4.75	3.05	7.75	3.05	10.75	1.02
2.00	1.02	5.00	3.05	8.00	2.03	11.00	1.02
2.25	1.02	5.25	5.08	8.25	2.03	11.25	0.00
2.50	2.03	5.50	5.08	8.50	2.03	11.50	1.02
2.75	2.03	5.75	38.61	8.75	1.02	11.75	1.02
3.00	2.03	6.00	38.61	9.00	2.03	12.00	1.02

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--------------------
| CALIB            |
| STANDHYD (  0040)|   Area    (ha)=   0.61
|ID= 1 DT= 5.0 min |   Total Imp(%)=  48.00   Dir. Conn.(%)=  48.00
--------------------
                              IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.29         0.32
     Dep. Storage     (mm)=       1.00         1.50
     Average Slope     (%)=       1.00         2.00
     Length            (m)=      63.77        40.00
     Mannings n           =      0.013        0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.
```

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.02	3.083	1.02	6.083	8.13	9.08	1.02
0.167	1.02	3.167	1.02	6.167	8.13	9.17	1.02
0.250	1.02	3.250	1.02	6.250	8.13	9.25	1.02
0.333	1.02	3.333	2.03	6.333	8.13	9.33	2.03
0.417	1.02	3.417	2.03	6.417	8.13	9.42	2.03
0.500	1.02	3.500	2.03	6.500	8.13	9.50	2.03
0.583	1.02	3.583	2.03	6.583	3.05	9.58	1.02
0.667	1.02	3.667	2.03	6.667	3.05	9.67	1.02
0.750	1.02	3.750	2.03	6.750	3.05	9.75	1.02
0.833	0.00	3.833	1.02	6.833	3.05	9.83	1.02
0.917	0.00	3.917	1.02	6.917	3.05	9.92	1.02
1.000	0.00	4.000	1.02	7.000	3.05	10.00	1.02
1.083	1.02	4.083	3.05	7.083	3.05	10.08	1.02
1.167	1.02	4.167	3.05	7.167	3.05	10.17	1.02
1.250	1.02	4.250	3.05	7.250	3.05	10.25	1.02
1.333	1.02	4.333	3.05	7.333	2.03	10.33	1.02
1.417	1.02	4.417	3.05	7.417	2.03	10.42	1.02
1.500	1.02	4.500	3.05	7.500	2.03	10.50	1.02
1.583	1.02	4.583	3.05	7.583	3.05	10.58	1.02
1.667	1.02	4.667	3.05	7.667	3.05	10.67	1.02
1.750	1.02	4.750	3.05	7.750	3.05	10.75	1.02
1.833	1.02	4.833	3.05	7.833	2.03	10.83	1.02
1.917	1.02	4.917	3.05	7.917	2.03	10.92	1.02
2.000	1.02	5.000	3.05	8.000	2.03	11.00	1.02
2.083	1.02	5.083	5.08	8.083	2.03	11.08	0.00
2.167	1.02	5.167	5.08	8.167	2.03	11.17	0.00
2.250	1.02	5.250	5.08	8.250	2.03	11.25	0.00
2.333	2.03	5.333	5.08	8.333	2.03	11.33	1.02
2.417	2.03	5.417	5.08	8.417	2.03	11.42	1.02
2.500	2.03	5.500	5.08	8.500	2.03	11.50	1.02
2.583	2.03	5.583	38.61	8.583	1.02	11.58	1.02
2.667	2.03	5.667	38.61	8.667	1.02	11.67	1.02
2.750	2.03	5.750	38.61	8.750	1.02	11.75	1.02
2.833	2.03	5.833	38.61	8.833	2.03	11.83	1.02
2.917	2.03	5.917	38.61	8.917	2.03	11.92	1.02
3.000	2.03	6.000	38.61	9.000	2.03	12.00	1.02

```
     Max.Eff.Inten.(mm/hr)=      38.61        19.50
               over (min)         5.00        20.00
     Storage Coeff.  (min)=       2.85 (ii)   16.43 (ii)
     Unit Hyd. Tpeak (min)=       5.00        20.00
     Unit Hyd. peak  (cms)=       0.28         0.06
                                                    *TOTALS*
     PEAK FLOW       (cms)=       0.03         0.01          0.042 (iii)
     TIME TO PEAK    (hrs)=       6.00         6.17          6.00
     RUNOFF VOLUME    (mm)=      41.93        17.66          29.29
     TOTAL RAINFALL   (mm)=      42.93        42.93          42.93
     RUNOFF COEFFICIENT   =       0.98         0.41          0.68

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  82.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------
--------------------
| RESERVOIR(  0043)|
| IN= 2---> OUT= 1 |
| DT=  5.0 min     |     OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
--------------------      (cms)     (ha.m.)   |   (cms)     (ha.m.)
                          0.0000     0.0000   |   0.0100      0.0295

                                AREA     QPEAK     TPEAK       R.V.
                                (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  0040)      0.610      0.042      6.00      29.29
   OUTFLOW: ID= 1 (  0043)      0.610      0.004      7.33      28.07

                  PEAK   FLOW   REDUCTION [Qout/Qin](%)=  9.57
                  TIME SHIFT OF PEAK FLOW         (min)= 80.00
                  MAXIMUM  STORAGE   USED       (ha.m.)=  0.0118

--------------------------------------------------------------------------------

--------------------
|    READ STORM    |    Filename: C:\Users\ygollamudi\AppD
|                  |              ata\Local\Temp\
|                  |              e88bcada-d938-48ee-986c-873dd4f72d8d\185de9d9
| Ptotal= 42.93 mm |    Comments: 2yr
--------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.25    1.02 |  3.25    1.02 |  6.25    8.13 |  9.25    1.02
                0.50    1.02 |  3.50    2.03 |  6.50    8.13 |  9.50    2.03
                0.75    1.02 |  3.75    2.03 |  6.75    3.05 |  9.75    1.02
                1.00    0.00 |  4.00    1.02 |  7.00    3.05 | 10.00    1.02
                1.25    1.02 |  4.25    3.05 |  7.25    3.05 | 10.25    1.02
                1.50    1.02 |  4.50    3.05 |  7.50    2.03 | 10.50    1.02
                1.75    1.02 |  4.75    3.05 |  7.75    3.05 | 10.75    1.02
                2.00    1.02 |  5.00    3.05 |  8.00    2.03 | 11.00    1.02
                2.25    1.02 |  5.25    5.08 |  8.25    2.03 | 11.25    0.00
                2.50    2.03 |  5.50    5.08 |  8.50    2.03 | 11.50    1.02
                2.75    2.03 |  5.75   38.61 |  8.75    1.02 | 11.75    1.02
                3.00    2.03 |  6.00   38.61 |  9.00    2.03 | 12.00    1.02

--------------------------------------------------------------------------------

--------------------
| CALIB            |
| STANDHYD (  0042)|   Area    (ha)=   1.14
|ID= 1 DT= 5.0 min |   Total Imp(%)=  49.00   Dir. Conn.(%)=  49.00
--------------------
                                IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.56         0.58
     Dep. Storage     (mm)=       1.00         1.50
     Average Slope     (%)=       1.00         2.00
     Length            (m)=      87.18        40.00
     Mannings n           =      0.013        0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.

                                ---- TRANSFORMED HYETOGRAPH ----
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
               0.083    1.02 | 3.083    1.02 | 6.083    8.13 |  9.08    1.02
               0.167    1.02 | 3.167    1.02 | 6.167    8.13 |  9.17    1.02
               0.250    1.02 | 3.250    1.02 | 6.250    8.13 |  9.25    1.02
               0.333    1.02 | 3.333    2.03 | 6.333    8.13 |  9.33    2.03
               0.417    1.02 | 3.417    2.03 | 6.417    8.13 |  9.42    2.03
               0.500    1.02 | 3.500    2.03 | 6.500    8.13 |  9.50    2.03
               0.583    1.02 | 3.583    2.03 | 6.583    3.05 |  9.58    1.02
               0.667    1.02 | 3.667    2.03 | 6.667    3.05 |  9.67    1.02
               0.750    1.02 | 3.750    2.03 | 6.750    3.05 |  9.75    1.02
               0.833    0.00 | 3.833    1.02 | 6.833    3.05 |  9.83    1.02
               0.917    0.00 | 3.917    1.02 | 6.917    3.05 |  9.92    1.02
               1.000    0.00 | 4.000    1.02 | 7.000    3.05 | 10.00    1.02
               1.083    1.02 | 4.083    3.05 | 7.083    3.05 | 10.08    1.02
               1.167    1.02 | 4.167    3.05 | 7.167    3.05 | 10.17    1.02
               1.250    1.02 | 4.250    3.05 | 7.250    3.05 | 10.25    1.02
               1.333    1.02 | 4.333    3.05 | 7.333    2.03 | 10.33    1.02
               1.417    1.02 | 4.417    3.05 | 7.417    2.03 | 10.42    1.02
               1.500    1.02 | 4.500    3.05 | 7.500    2.03 | 10.50    1.02
               1.583    1.02 | 4.583    3.05 | 7.583    3.05 | 10.58    1.02
               1.667    1.02 | 4.667    3.05 | 7.667    3.05 | 10.67    1.02
               1.750    1.02 | 4.750    3.05 | 7.750    3.05 | 10.75    1.02
               1.833    1.02 | 4.833    3.05 | 7.833    2.03 | 10.83    1.02
               1.917    1.02 | 4.917    3.05 | 7.917    2.03 | 10.92    1.02
               2.000    1.02 | 5.000    3.05 | 8.000    2.03 | 11.00    1.02
               2.083    1.02 | 5.083    5.08 | 8.083    2.03 | 11.08    0.00
               2.167    1.02 | 5.167    5.08 | 8.167    2.03 | 11.17    0.00
               2.250    1.02 | 5.250    5.08 | 8.250    2.03 | 11.25    0.00
               2.333    2.03 | 5.333    5.08 | 8.333    2.03 | 11.33    1.02
               2.417    2.03 | 5.417    5.08 | 8.417    2.03 | 11.42    1.02
               2.500    2.03 | 5.500    5.08 | 8.500    2.03 | 11.50    1.02
               2.583    2.03 | 5.583   38.61 | 8.583    1.02 | 11.58    1.02
               2.667    2.03 | 5.667   38.61 | 8.667    1.02 | 11.67    1.02
               2.750    2.03 | 5.750   38.61 | 8.750    1.02 | 11.75    1.02
               2.833    2.03 | 5.833   38.61 | 8.833    2.03 | 11.83    1.02
               2.917    2.03 | 5.917   38.61 | 8.917    2.03 | 11.92    1.02
               3.000    2.03 | 6.000   38.61 | 9.000    2.03 | 12.00    1.02

     Max.Eff.Inten.(mm/hr)=      38.61        19.50
               over (min)         5.00        20.00
     Storage Coeff.  (min)=       3.44 (ii)   17.02 (ii)
     Unit Hyd. Tpeak (min)=       5.00        20.00
     Unit Hyd. peak  (cms)=       0.26         0.06
```

				TOTALS
PEAK FLOW	(cms)=	0.06	0.02	0.079 (iii)
TIME TO PEAK	(hrs)=	6.00	6.17	6.00
RUNOFF VOLUME	(mm)=	41.93	17.66	29.54
TOTAL RAINFALL	(mm)=	42.93	42.93	42.93
RUNOFF COEFFICIENT	=	0.98	0.41	0.69

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 82.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

RESERVOIR(0044)				
IN= 2---> OUT= 1				
DT= 5.0 min	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
	0.0000	0.0000	0.0160	0.0570

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0042)	1.140	0.079	6.00	29.54
OUTFLOW: ID= 1 (0044)	1.140	0.006	7.83	28.75

PEAK FLOW REDUCTION [Qout/Qin](%)= 8.24
TIME SHIFT OF PEAK FLOW (min)=110.00
MAXIMUM STORAGE USED (ha.m.)= 0.0231

READ STORM	Filename: C:\Users\ygollamudi\AppData\Local\Temp\e88bcada-d938-48ee-986c-873dd4f72d8d\185de9d9
Ptotal= 42.93 mm	Comments: 2yr

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	1.02	3.25	1.02	6.25	8.13	9.25	1.02
0.50	1.02	3.50	2.03	6.50	8.13	9.50	2.03
0.75	1.02	3.75	2.03	6.75	3.05	9.75	1.02
1.00	0.00	4.00	1.02	7.00	3.05	10.00	1.02
1.25	1.02	4.25	3.05	7.25	3.05	10.25	1.02
1.50	1.02	4.50	3.05	7.50	2.03	10.50	1.02
1.75	1.02	4.75	3.05	7.75	3.05	10.75	1.02
2.00	1.02	5.00	3.05	8.00	2.03	11.00	1.02
2.25	1.02	5.25	5.08	8.25	2.03	11.25	0.00
2.50	2.03	5.50	5.08	8.50	2.03	11.50	1.02
2.75	2.03	5.75	38.61	8.75	1.02	11.75	1.02
3.00	2.03	6.00	38.61	9.00	2.03	12.00	1.02

CALIB			
STANDHYD (0051)	Area (ha)=	0.54	
ID= 1 DT= 5.0 min	Total Imp(%)=	52.00	Dir. Conn.(%)= 52.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.28	0.26
Dep. Storage	(mm)=	1.00	1.50
Average Slope	(%)=	1.00	2.00
Length	(m)=	60.00	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.02	3.083	1.02	6.083	8.13	9.08	1.02
0.167	1.02	3.167	1.02	6.167	8.13	9.17	1.02
0.250	1.02	3.250	1.02	6.250	8.13	9.25	1.02
0.333	1.02	3.333	2.03	6.333	8.13	9.33	2.03
0.417	1.02	3.417	2.03	6.417	8.13	9.42	2.03
0.500	1.02	3.500	2.03	6.500	8.13	9.50	2.03
0.583	1.02	3.583	2.03	6.583	3.05	9.58	1.02
0.667	1.02	3.667	2.03	6.667	3.05	9.67	1.02
0.750	1.02	3.750	2.03	6.750	3.05	9.75	1.02
0.833	0.00	3.833	1.02	6.833	3.05	9.83	1.02
0.917	0.00	3.917	1.02	6.917	3.05	9.92	1.02
1.000	0.00	4.000	1.02	7.000	3.05	10.00	1.02
1.083	1.02	4.083	3.05	7.083	3.05	10.08	1.02
1.167	1.02	4.167	3.05	7.167	3.05	10.17	1.02
1.250	1.02	4.250	3.05	7.250	3.05	10.25	1.02
1.333	1.02	4.333	3.05	7.333	2.03	10.33	1.02
1.417	1.02	4.417	3.05	7.417	2.03	10.42	1.02
1.500	1.02	4.500	3.05	7.500	2.03	10.50	1.02
1.583	1.02	4.583	3.05	7.583	3.05	10.58	1.02
1.667	1.02	4.667	3.05	7.667	3.05	10.67	1.02
1.750	1.02	4.750	3.05	7.750	3.05	10.75	1.02
1.833	1.02	4.833	3.05	7.833	2.03	10.83	1.02
1.917	1.02	4.917	3.05	7.917	2.03	10.92	1.02
2.000	1.02	5.000	3.05	8.000	2.03	11.00	1.02
2.083	1.02	5.083	5.08	8.083	2.03	11.08	0.00
2.167	1.02	5.167	5.08	8.167	2.03	11.17	0.00
2.250	1.02	5.250	5.08	8.250	2.03	11.25	0.00
2.333	2.03	5.333	5.08	8.333	2.03	11.33	1.02
2.417	2.03	5.417	5.08	8.417	2.03	11.42	1.02
2.500	2.03	5.500	5.08	8.500	2.03	11.50	1.02
2.583	2.03	5.583	38.61	8.583	1.02	11.58	1.02
2.667	2.03	5.667	38.61	8.667	1.02	11.67	1.02
2.750	2.03	5.750	38.61	8.750	1.02	11.75	1.02
2.833	2.03	5.833	38.61	8.833	2.03	11.83	1.02
2.917	2.03	5.917	38.61	8.917	2.03	11.92	1.02
3.000	2.03	6.000	38.61	9.000	2.03	12.00	1.02

Max.Eff.Inten.(mm/hr)=		38.61	19.50	
over (min)		5.00	20.00	
Storage Coeff. (min)=		2.75 (ii)	16.32 (ii)	
Unit Hyd. Tpeak (min)=		5.00	20.00	
Unit Hyd. peak (cms)=		0.28	0.06	
				TOTALS
PEAK FLOW	(cms)=	0.03	0.01	0.039 (iii)
TIME TO PEAK	(hrs)=	6.00	6.17	6.00
RUNOFF VOLUME	(mm)=	41.93	17.66	30.26
TOTAL RAINFALL	(mm)=	42.93	42.93	42.93

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     RUNOFF COEFFICIENT   =       0.98         0.41          0.70

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN*  =  82.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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--------------------
| RESERVOIR(  0045)|
| IN= 2---> OUT= 1 |
| DT=  5.0 min     |     OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
--------------------      (cms)     (ha.m.)   |   (cms)     (ha.m.)
                          0.0000     0.0000   |   0.0090      0.0260

                                AREA     QPEAK     TPEAK       R.V.
                                (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  0051)      0.540      0.039      6.00      30.26
   OUTFLOW: ID= 1 (  0045)      0.540      0.004      7.25      28.90

                  PEAK   FLOW   REDUCTION [Qout/Qin](%)=  9.66
                  TIME SHIFT OF PEAK FLOW         (min)= 75.00
                  MAXIMUM  STORAGE   USED       (ha.m.)=  0.0108

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|    READ STORM    |    Filename: C:\Users\ygollamudi\AppD
|                  |              ata\Local\Temp\
|                  |              e88bcada-d938-48ee-986c-873dd4f72d8d\185de9d9
| Ptotal= 42.93 mm |    Comments: 2yr
--------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.25    1.02 |  3.25    1.02 |  6.25    8.13 |  9.25    1.02
                0.50    1.02 |  3.50    2.03 |  6.50    8.13 |  9.50    2.03
                0.75    1.02 |  3.75    2.03 |  6.75    3.05 |  9.75    1.02
                1.00    0.00 |  4.00    1.02 |  7.00    3.05 | 10.00    1.02
                1.25    1.02 |  4.25    3.05 |  7.25    3.05 | 10.25    1.02
                1.50    1.02 |  4.50    3.05 |  7.50    2.03 | 10.50    1.02
                1.75    1.02 |  4.75    3.05 |  7.75    3.05 | 10.75    1.02
                2.00    1.02 |  5.00    3.05 |  8.00    2.03 | 11.00    1.02
                2.25    1.02 |  5.25    5.08 |  8.25    2.03 | 11.25    0.00
                2.50    2.03 |  5.50    5.08 |  8.50    2.03 | 11.50    1.02
                2.75    2.03 |  5.75   38.61 |  8.75    1.02 | 11.75    1.02
                3.00    2.03 |  6.00   38.61 |  9.00    2.03 | 12.00    1.02

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| CALIB            |
| STANDHYD (  0046)|   Area    (ha)=   3.47
|ID= 1 DT= 5.0 min |   Total Imp(%)=  60.00   Dir. Conn.(%)=  60.00
--------------------
                           IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       2.08         1.39
     Dep. Storage     (mm)=       1.00         1.50
     Average Slope     (%)=       1.00         2.00
     Length            (m)=     152.10        40.00
     Mannings n             =      0.013        0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                                ---- TRANSFORMED HYETOGRAPH ----
                  TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                   hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                 0.083    1.02 | 3.083    1.02 | 6.083    8.13 |  9.08    1.02
                 0.167    1.02 | 3.167    1.02 | 6.167    8.13 |  9.17    1.02
                 0.250    1.02 | 3.250    1.02 | 6.250    8.13 |  9.25    1.02
                 0.333    1.02 | 3.333    2.03 | 6.333    8.13 |  9.33    2.03
                 0.417    1.02 | 3.417    2.03 | 6.417    8.13 |  9.42    2.03
                 0.500    1.02 | 3.500    2.03 | 6.500    8.13 |  9.50    2.03
                 0.583    1.02 | 3.583    2.03 | 6.583    3.05 |  9.58    1.02
                 0.667    1.02 | 3.667    2.03 | 6.667    3.05 |  9.67    1.02
                 0.750    1.02 | 3.750    2.03 | 6.750    3.05 |  9.75    1.02
                 0.833    0.00 | 3.833    1.02 | 6.833    3.05 |  9.83    1.02
                 0.917    0.00 | 3.917    1.02 | 6.917    3.05 |  9.92    1.02
                 1.000    0.00 | 4.000    1.02 | 7.000    3.05 | 10.00    1.02
                 1.083    1.02 | 4.083    3.05 | 7.083    3.05 | 10.08    1.02
                 1.167    1.02 | 4.167    3.05 | 7.167    3.05 | 10.17    1.02
                 1.250    1.02 | 4.250    3.05 | 7.250    3.05 | 10.25    1.02
                 1.333    1.02 | 4.333    3.05 | 7.333    2.03 | 10.33    1.02
                 1.417    1.02 | 4.417    3.05 | 7.417    2.03 | 10.42    1.02
                 1.500    1.02 | 4.500    3.05 | 7.500    2.03 | 10.50    1.02
                 1.583    1.02 | 4.583    3.05 | 7.583    3.05 | 10.58    1.02
                 1.667    1.02 | 4.667    3.05 | 7.667    3.05 | 10.67    1.02
                 1.750    1.02 | 4.750    3.05 | 7.750    3.05 | 10.75    1.02
                 1.833    1.02 | 4.833    3.05 | 7.833    2.03 | 10.83    1.02
                 1.917    1.02 | 4.917    3.05 | 7.917    2.03 | 10.92    1.02
                 2.000    1.02 | 5.000    3.05 | 8.000    2.03 | 11.00    1.02
                 2.083    1.02 | 5.083    5.08 | 8.083    2.03 | 11.08    0.00
                 2.167    1.02 | 5.167    5.08 | 8.167    2.03 | 11.17    0.00
                 2.250    1.02 | 5.250    5.08 | 8.250    2.03 | 11.25    0.00
                 2.333    2.03 | 5.333    5.08 | 8.333    2.03 | 11.33    1.02
                 2.417    2.03 | 5.417    5.08 | 8.417    2.03 | 11.42    1.02
                 2.500    2.03 | 5.500    5.08 | 8.500    2.03 | 11.50    1.02
                 2.583    2.03 | 5.583   38.61 | 8.583    1.02 | 11.58    1.02
                 2.667    2.03 | 5.667   38.61 | 8.667    1.02 | 11.67    1.02
                 2.750    2.03 | 5.750   38.61 | 8.750    1.02 | 11.75    1.02
                 2.833    2.03 | 5.833   38.61 | 8.833    2.03 | 11.83    1.02
                 2.917    2.03 | 5.917   38.61 | 8.917    2.03 | 11.92    1.02
                 3.000    2.03 | 6.000   38.61 | 9.000    2.03 | 12.00    1.02

     Max.Eff.Inten.(mm/hr)=      38.61        19.50
               over (min)         5.00        20.00
     Storage Coeff.  (min)=       4.81 (ii)   18.38 (ii)
     Unit Hyd. Tpeak (min)=       5.00        20.00
     Unit Hyd. peak  (cms)=       0.22         0.06
                                                        *TOTALS*
     PEAK FLOW       (cms)=       0.22         0.05       0.266 (iii)
     TIME TO PEAK    (hrs)=       6.00         6.17        6.00
     RUNOFF VOLUME    (mm)=      41.93        17.66       32.22
     TOTAL RAINFALL   (mm)=      42.93        42.93       42.93
     RUNOFF COEFFICIENT   =       0.98         0.41        0.75

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
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          CN*  =  82.0    Ia = Dep. Storage  (Above)
     (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
          THAN THE STORAGE COEFFICIENT.
    (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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| RESERVOIR(  0047)|
| IN= 2---> OUT= 1 |
| DT=  5.0 min     |     OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
--------------------      (cms)     (ha.m.)   |   (cms)     (ha.m.)
                          0.0000     0.0000   |   0.0670      0.1700

                               AREA     QPEAK     TPEAK       R.V.
                               (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  0046)     3.470      0.266      6.00      32.22
   OUTFLOW: ID= 1 (  0047)     3.470      0.028      7.17      32.03

                  PEAK   FLOW   REDUCTION [Qout/Qin](%)= 10.68
                  TIME SHIFT OF PEAK FLOW         (min)= 70.00
                  MAXIMUM  STORAGE   USED       (ha.m.)=  0.0721

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|    READ STORM    |    Filename: C:\Users\ygollamudi\AppD
|                  |              ata\Local\Temp\
|                  |              e88bcada-d938-48ee-986c-873dd4f72d8d\185de9d9
| Ptotal= 42.93 mm |    Comments: 2yr
--------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.25    1.02 |  3.25    1.02 |  6.25    8.13 |  9.25    1.02
                0.50    1.02 |  3.50    2.03 |  6.50    8.13 |  9.50    2.03
                0.75    1.02 |  3.75    2.03 |  6.75    3.05 |  9.75    1.02
                1.00    0.00 |  4.00    1.02 |  7.00    3.05 | 10.00    1.02
                1.25    1.02 |  4.25    3.05 |  7.25    3.05 | 10.25    1.02
                1.50    1.02 |  4.50    3.05 |  7.50    2.03 | 10.50    1.02
                1.75    1.02 |  4.75    3.05 |  7.75    3.05 | 10.75    1.02
                2.00    1.02 |  5.00    3.05 |  8.00    2.03 | 11.00    1.02
                2.25    1.02 |  5.25    5.08 |  8.25    2.03 | 11.25    0.00
                2.50    2.03 |  5.50    5.08 |  8.50    2.03 | 11.50    1.02
                2.75    2.03 |  5.75   38.61 |  8.75    1.02 | 11.75    1.02
                3.00    2.03 |  6.00   38.61 |  9.00    2.03 | 12.00    1.02

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| CALIB            |
| STANDHYD (  0041)|   Area    (ha)=   1.62
|ID= 1 DT= 5.0 min |   Total Imp(%)=  46.00   Dir. Conn.(%)=  46.00
--------------------
                           IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.75         0.87
     Dep. Storage     (mm)=       1.00         1.50
     Average Slope     (%)=       1.00         2.00
     Length            (m)=     103.92        40.00
     Mannings n           =      0.013        0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.
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                    ---- TRANSFORMED HYETOGRAPH ----
 TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
  hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
0.083    1.02 | 3.083    1.02 | 6.083    8.13 |  9.08    1.02
0.167    1.02 | 3.167    1.02 | 6.167    8.13 |  9.17    1.02
0.250    1.02 | 3.250    1.02 | 6.250    8.13 |  9.25    1.02
0.333    1.02 | 3.333    2.03 | 6.333    8.13 |  9.33    2.03
0.417    1.02 | 3.417    2.03 | 6.417    8.13 |  9.42    2.03
0.500    1.02 | 3.500    2.03 | 6.500    8.13 |  9.50    2.03
0.583    1.02 | 3.583    2.03 | 6.583    3.05 |  9.58    1.02
0.667    1.02 | 3.667    2.03 | 6.667    3.05 |  9.67    1.02
0.750    1.02 | 3.750    2.03 | 6.750    3.05 |  9.75    1.02
0.833    0.00 | 3.833    1.02 | 6.833    3.05 |  9.83    1.02
0.917    0.00 | 3.917    1.02 | 6.917    3.05 |  9.92    1.02
1.000    0.00 | 4.000    1.02 | 7.000    3.05 | 10.00    1.02
1.083    1.02 | 4.083    3.05 | 7.083    3.05 | 10.08    1.02
1.167    1.02 | 4.167    3.05 | 7.167    3.05 | 10.17    1.02
1.250    1.02 | 4.250    3.05 | 7.250    3.05 | 10.25    1.02
1.333    1.02 | 4.333    3.05 | 7.333    2.03 | 10.33    1.02
1.417    1.02 | 4.417    3.05 | 7.417    2.03 | 10.42    1.02
1.500    1.02 | 4.500    3.05 | 7.500    2.03 | 10.50    1.02
1.583    1.02 | 4.583    3.05 | 7.583    3.05 | 10.58    1.02
1.667    1.02 | 4.667    3.05 | 7.667    3.05 | 10.67    1.02
1.750    1.02 | 4.750    3.05 | 7.750    3.05 | 10.75    1.02
1.833    1.02 | 4.833    3.05 | 7.833    2.03 | 10.83    1.02
1.917    1.02 | 4.917    3.05 | 7.917    2.03 | 10.92    1.02
2.000    1.02 | 5.000    3.05 | 8.000    2.03 | 11.00    1.02
2.083    1.02 | 5.083    5.08 | 8.083    2.03 | 11.08    0.00
2.167    1.02 | 5.167    5.08 | 8.167    2.03 | 11.17    0.00
2.250    1.02 | 5.250    5.08 | 8.250    2.03 | 11.25    0.00
2.333    2.03 | 5.333    5.08 | 8.333    2.03 | 11.33    1.02
2.417    2.03 | 5.417    5.08 | 8.417    2.03 | 11.42    1.02
2.500    2.03 | 5.500    5.08 | 8.500    2.03 | 11.50    1.02
2.583    2.03 | 5.583   38.61 | 8.583    1.02 | 11.58    1.02
2.667    2.03 | 5.667   38.61 | 8.667    1.02 | 11.67    1.02
2.750    2.03 | 5.750   38.61 | 8.750    1.02 | 11.75    1.02
2.833    2.03 | 5.833   38.61 | 8.833    2.03 | 11.83    1.02
2.917    2.03 | 5.917   38.61 | 8.917    2.03 | 11.92    1.02
3.000    2.03 | 6.000   38.61 | 9.000    2.03 | 12.00    1.02

  Max.Eff.Inten.(mm/hr)=      38.61        22.90
            over (min)         5.00        20.00
  Storage Coeff.  (min)=       3.83 (ii)   16.55 (ii)
  Unit Hyd. Tpeak (min)=       5.00        20.00
  Unit Hyd. peak  (cms)=       0.25         0.06
                                                    *TOTALS*
  PEAK FLOW       (cms)=       0.08         0.04       0.114 (iii)
  TIME TO PEAK    (hrs)=       6.00         6.17        6.00
  RUNOFF VOLUME    (mm)=      41.93        20.73       30.48
  TOTAL RAINFALL   (mm)=      42.93        42.93       42.93
  RUNOFF COEFFICIENT   =       0.98         0.48        0.71

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

     (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
          CN*  =  86.0    Ia = Dep. Storage  (Above)
    (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
         THAN THE STORAGE COEFFICIENT.
   (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
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--------------------------------------------------------------------------------
--------------------
| RESERVOIR(  0048)|
| IN= 2---> OUT= 1 |
| DT=  5.0 min     |     OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
--------------------      (cms)     (ha.m.)   |   (cms)     (ha.m.)
                          0.0000     0.0000   |   0.0570      0.0650

                               AREA     QPEAK     TPEAK       R.V.
                               (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  0041)     1.620      0.114      6.00      30.48
   OUTFLOW: ID= 1 (  0048)     1.620      0.023      6.67      30.30

                  PEAK   FLOW   REDUCTION [Qout/Qin](%)= 20.11
                  TIME SHIFT OF PEAK FLOW         (min)= 40.00
                  MAXIMUM  STORAGE   USED       (ha.m.)=  0.0262

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|    READ STORM    |    Filename: C:\Users\ygollamudi\AppD
|                  |              ata\Local\Temp\
|                  |              e88bcada-d938-48ee-986c-873dd4f72d8d\185de9d9
| Ptotal= 42.93 mm |    Comments: 2yr
--------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.25    1.02 |  3.25    1.02 |  6.25    8.13 |  9.25    1.02
                0.50    1.02 |  3.50    2.03 |  6.50    8.13 |  9.50    2.03
                0.75    1.02 |  3.75    2.03 |  6.75    3.05 |  9.75    1.02
                1.00    0.00 |  4.00    1.02 |  7.00    3.05 | 10.00    1.02
                1.25    1.02 |  4.25    3.05 |  7.25    3.05 | 10.25    1.02
                1.50    1.02 |  4.50    3.05 |  7.50    2.03 | 10.50    1.02
                1.75    1.02 |  4.75    3.05 |  7.75    3.05 | 10.75    1.02
                2.00    1.02 |  5.00    3.05 |  8.00    2.03 | 11.00    1.02
                2.25    1.02 |  5.25    5.08 |  8.25    2.03 | 11.25    0.00
                2.50    2.03 |  5.50    5.08 |  8.50    2.03 | 11.50    1.02
                2.75    2.03 |  5.75   38.61 |  8.75    1.02 | 11.75    1.02
                3.00    2.03 |  6.00   38.61 |  9.00    2.03 | 12.00    1.02

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| CALIB            |
| STANDHYD (  0049)|   Area    (ha)=   1.63
|ID= 1 DT= 5.0 min |   Total Imp(%)=  40.00   Dir. Conn.(%)=  40.00
--------------------
                           IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.65         0.98
     Dep. Storage     (mm)=       1.00         1.50
     Average Slope     (%)=       1.00         2.00
     Length            (m)=     104.24        40.00
     Mannings n           =      0.013        0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.

                          ---- TRANSFORMED HYETOGRAPH ----
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.083    1.02 | 3.083    1.02 | 6.083    8.13 |  9.08    1.02
                0.167    1.02 | 3.167    1.02 | 6.167    8.13 |  9.17    1.02
                0.250    1.02 | 3.250    1.02 | 6.250    8.13 |  9.25    1.02
                0.333    1.02 | 3.333    2.03 | 6.333    8.13 |  9.33    2.03
                0.417    1.02 | 3.417    2.03 | 6.417    8.13 |  9.42    2.03
                0.500    1.02 | 3.500    2.03 | 6.500    8.13 |  9.50    2.03
                0.583    1.02 | 3.583    2.03 | 6.583    3.05 |  9.58    1.02
                0.667    1.02 | 3.667    2.03 | 6.667    3.05 |  9.67    1.02
                0.750    1.02 | 3.750    2.03 | 6.750    3.05 |  9.75    1.02
                0.833    0.00 | 3.833    1.02 | 6.833    3.05 |  9.83    1.02
                0.917    0.00 | 3.917    1.02 | 6.917    3.05 |  9.92    1.02
                1.000    0.00 | 4.000    1.02 | 7.000    3.05 | 10.00    1.02
                1.083    1.02 | 4.083    3.05 | 7.083    3.05 | 10.08    1.02
                1.167    1.02 | 4.167    3.05 | 7.167    3.05 | 10.17    1.02
                1.250    1.02 | 4.250    3.05 | 7.250    3.05 | 10.25    1.02
                1.333    1.02 | 4.333    3.05 | 7.333    2.03 | 10.33    1.02
                1.417    1.02 | 4.417    3.05 | 7.417    2.03 | 10.42    1.02
                1.500    1.02 | 4.500    3.05 | 7.500    2.03 | 10.50    1.02
                1.583    1.02 | 4.583    3.05 | 7.583    3.05 | 10.58    1.02
                1.667    1.02 | 4.667    3.05 | 7.667    3.05 | 10.67    1.02
                1.750    1.02 | 4.750    3.05 | 7.750    3.05 | 10.75    1.02
                1.833    1.02 | 4.833    3.05 | 7.833    2.03 | 10.83    1.02
                1.917    1.02 | 4.917    3.05 | 7.917    2.03 | 10.92    1.02
                2.000    1.02 | 5.000    3.05 | 8.000    2.03 | 11.00    1.02
                2.083    1.02 | 5.083    5.08 | 8.083    2.03 | 11.08    0.00
                2.167    1.02 | 5.167    5.08 | 8.167    2.03 | 11.17    0.00
                2.250    1.02 | 5.250    5.08 | 8.250    2.03 | 11.25    0.00
                2.333    2.03 | 5.333    5.08 | 8.333    2.03 | 11.33    1.02
                2.417    2.03 | 5.417    5.08 | 8.417    2.03 | 11.42    1.02
                2.500    2.03 | 5.500    5.08 | 8.500    2.03 | 11.50    1.02
                2.583    2.03 | 5.583   38.61 | 8.583    1.02 | 11.58    1.02
                2.667    2.03 | 5.667   38.61 | 8.667    1.02 | 11.67    1.02
                2.750    2.03 | 5.750   38.61 | 8.750    1.02 | 11.75    1.02
                2.833    2.03 | 5.833   38.61 | 8.833    2.03 | 11.83    1.02
                2.917    2.03 | 5.917   38.61 | 8.917    2.03 | 11.92    1.02
                3.000    2.03 | 6.000   38.61 | 9.000    2.03 | 12.00    1.02

     Max.Eff.Inten.(mm/hr)=      38.61        19.50
               over (min)         5.00        20.00
     Storage Coeff.  (min)=       3.83 (ii)   17.40 (ii)
     Unit Hyd. Tpeak (min)=       5.00        20.00
     Unit Hyd. peak  (cms)=       0.25         0.06
                                                          *TOTALS*
     PEAK FLOW       (cms)=       0.07         0.04          0.101 (iii)
     TIME TO PEAK    (hrs)=       6.00         6.17          6.00
     RUNOFF VOLUME    (mm)=      41.93        17.66         27.36
     TOTAL RAINFALL   (mm)=      42.93        42.93         42.93
     RUNOFF COEFFICIENT   =       0.98         0.41          0.64

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  82.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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--------------------
| RESERVOIR(  0050)|
| IN= 2---> OUT= 1 |
| DT=  5.0 min     |     OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
```

```
--------------------      (cms)     (ha.m.)   |   (cms)     (ha.m.)
                         0.0000     0.0000   |   0.0300     0.0710

                                AREA     QPEAK     TPEAK       R.V.
                                (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  0049)      1.630     0.101      6.00      27.36
   OUTFLOW: ID= 1 (  0050)      1.630     0.012      7.25      26.99

                  PEAK   FLOW   REDUCTION [Qout/Qin](%)= 11.70
                  TIME SHIFT OF PEAK FLOW         (min)= 75.00
                  MAXIMUM  STORAGE   USED       (ha.m.)=  0.0280

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================================================================================
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       V    V   I    SSSSS  U   U    A    L
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

       OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
      O   O    T      T    H   H   Y Y   MM MM  O   O
      O   O    T      T    H   H    Y    M   M  O   O
       OOO     T      T    H   H    Y    M   M   OOO
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                  *****  D E T A I L E D   O U T P U T *****

  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 5.0\VO2\voin.dat
  Output  filename: C:\Users\ygollamudi\AppData\Local\Civica\VH5\10c26041-43a5-
4194-90ea-ce2e7e4124a0\13c749b4-a844-4657-a321-f1d7e90c7070\s
  Summary filename: C:\Users\ygollamudi\AppData\Local\Civica\VH5\10c26041-43a5-
4194-90ea-ce2e7e4124a0\13c749b4-a844-4657-a321-f1d7e90c7070\s

DATE: 08-28-2019                          TIME: 04:19:44

USER:


COMMENTS: _____________________________________________________________

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  ********************************************
  ** SIMULATION : Run 02                     **
  ********************************************


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|    READ STORM    |    Filename: C:\Users\ygollamudi\AppD
|                  |              ata\Local\Temp\
|                  |              e88bcada-d938-48ee-986c-873dd4f72d8d\bfafd6f8

| Ptotal= 55.37 mm |    Comments: 5yr
--------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.25    1.02 |  3.25    3.05 |  6.25    9.14 |  9.25    1.02
                0.50    1.02 |  3.50    2.03 |  6.50   10.16 |  9.50    2.03
                0.75    1.02 |  3.75    2.03 |  6.75    5.08 |  9.75    2.03
                1.00    1.02 |  4.00    2.03 |  7.00    4.06 | 10.00    1.02
                1.25    1.02 |  4.25    4.06 |  7.25    3.05 | 10.25    1.02
                1.50    2.03 |  4.50    4.06 |  7.50    3.05 | 10.50    1.02
                1.75    1.02 |  4.75    4.06 |  7.75    4.06 | 10.75    2.03
                2.00    1.02 |  5.00    3.05 |  8.00    3.05 | 11.00    1.02
                2.25    2.03 |  5.25    7.11 |  8.25    2.03 | 11.25    1.02
                2.50    2.03 |  5.50    7.11 |  8.50    2.03 | 11.50    1.02
                2.75    2.03 |  5.75   49.78 |  8.75    3.05 | 11.75    1.02
                3.00    2.03 |  6.00   49.78 |  9.00    2.03 | 12.00    1.02

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--------------------
| CALIB            |
| STANDHYD (  0040)|   Area    (ha)=   0.61
|ID= 1 DT= 5.0 min |   Total Imp(%)=  48.00   Dir. Conn.(%)=  48.00
--------------------
                              IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.29         0.32
     Dep. Storage     (mm)=       1.00         1.50
     Average Slope     (%)=       1.00         2.00
     Length            (m)=      63.77        40.00
     Mannings n           =      0.013        0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.

                              ---- TRANSFORMED HYETOGRAPH ----
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
               0.083    1.02 | 3.083    3.05 | 6.083    9.14 |  9.08    1.02
               0.167    1.02 | 3.167    3.05 | 6.167    9.14 |  9.17    1.02
               0.250    1.02 | 3.250    3.05 | 6.250    9.14 |  9.25    1.02
               0.333    1.02 | 3.333    2.03 | 6.333   10.16 |  9.33    2.03
               0.417    1.02 | 3.417    2.03 | 6.417   10.16 |  9.42    2.03
               0.500    1.02 | 3.500    2.03 | 6.500   10.16 |  9.50    2.03
               0.583    1.02 | 3.583    2.03 | 6.583    5.08 |  9.58    2.03
               0.667    1.02 | 3.667    2.03 | 6.667    5.08 |  9.67    2.03
               0.750    1.02 | 3.750    2.03 | 6.750    5.08 |  9.75    2.03
               0.833    1.02 | 3.833    2.03 | 6.833    4.06 |  9.83    1.02
               0.917    1.02 | 3.917    2.03 | 6.917    4.06 |  9.92    1.02
               1.000    1.02 | 4.000    2.03 | 7.000    4.06 | 10.00    1.02
               1.083    1.02 | 4.083    4.06 | 7.083    3.05 | 10.08    1.02
               1.167    1.02 | 4.167    4.06 | 7.167    3.05 | 10.17    1.02
               1.250    1.02 | 4.250    4.06 | 7.250    3.05 | 10.25    1.02
               1.333    2.03 | 4.333    4.06 | 7.333    3.05 | 10.33    1.02
               1.417    2.03 | 4.417    4.06 | 7.417    3.05 | 10.42    1.02
               1.500    2.03 | 4.500    4.06 | 7.500    3.05 | 10.50    1.02
               1.583    1.02 | 4.583    4.06 | 7.583    4.06 | 10.58    2.03
               1.667    1.02 | 4.667    4.06 | 7.667    4.06 | 10.67    2.03
               1.750    1.02 | 4.750    4.06 | 7.750    4.06 | 10.75    2.03
               1.833    1.02 | 4.833    3.05 | 7.833    3.05 | 10.83    1.02
               1.917    1.02 | 4.917    3.05 | 7.917    3.05 | 10.92    1.02
               2.000    1.02 | 5.000    3.05 | 8.000    3.05 | 11.00    1.02
```

2.083	2.03	5.083	7.11	8.083	2.03	11.08	1.02
2.167	2.03	5.167	7.11	8.167	2.03	11.17	1.02
2.250	2.03	5.250	7.11	8.250	2.03	11.25	1.02
2.333	2.03	5.333	7.11	8.333	2.03	11.33	1.02
2.417	2.03	5.417	7.11	8.417	2.03	11.42	1.02
2.500	2.03	5.500	7.11	8.500	2.03	11.50	1.02
2.583	2.03	5.583	49.78	8.583	3.05	11.58	1.02
2.667	2.03	5.667	49.78	8.667	3.05	11.67	1.02
2.750	2.03	5.750	49.78	8.750	3.05	11.75	1.02
2.833	2.03	5.833	49.78	8.833	2.03	11.83	1.02
2.917	2.03	5.917	49.78	8.917	2.03	11.92	1.02
3.000	2.03	6.000	49.78	9.000	2.03	12.00	1.02

			TOTALS
Max.Eff.Inten.(mm/hr)=	49.78	29.18	
over (min)	5.00	15.00	
Storage Coeff. (min)=	2.58 (ii)	14.13 (ii)	
Unit Hyd. Tpeak (min)=	5.00	15.00	
Unit Hyd. peak (cms)=	0.29	0.08	
PEAK FLOW (cms)=	0.04	0.02	0.059 (iii)
TIME TO PEAK (hrs)=	6.00	6.08	6.00
RUNOFF VOLUME (mm)=	54.37	26.47	39.85
TOTAL RAINFALL (mm)=	55.37	55.37	55.37
RUNOFF COEFFICIENT =	0.98	0.48	0.72

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 82.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

RESERVOIR(0043)| IN= 2---> OUT= 1 | DT= 5.0 min	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
	0.0000	0.0000	0.0100	0.0295

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0040)	0.610	0.059	6.00	39.85
OUTFLOW: ID= 1 (0043)	0.610	0.005	7.17	38.63

PEAK FLOW REDUCTION [Qout/Qin](%)= 9.20
TIME SHIFT OF PEAK FLOW (min)= 70.00
MAXIMUM STORAGE USED (ha.m.)= 0.0161

READ STORM | Ptotal= 55.37 mm	Filename: C:\Users\ygollamudi\AppData\Local\Temp\e88bcada-d938-48ee-986c-873dd4f72d8d\bfafd6f8 Comments: 5yr

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	1.02	3.25	3.05	6.25	9.14	9.25	1.02
0.50	1.02	3.50	2.03	6.50	10.16	9.50	2.03
0.75	1.02	3.75	2.03	6.75	5.08	9.75	2.03
1.00	1.02	4.00	2.03	7.00	4.06	10.00	1.02
1.25	1.02	4.25	4.06	7.25	3.05	10.25	1.02
1.50	2.03	4.50	4.06	7.50	3.05	10.50	1.02
1.75	1.02	4.75	4.06	7.75	4.06	10.75	2.03
2.00	1.02	5.00	3.05	8.00	3.05	11.00	1.02
2.25	2.03	5.25	7.11	8.25	2.03	11.25	1.02
2.50	2.03	5.50	7.11	8.50	2.03	11.50	1.02
2.75	2.03	5.75	49.78	8.75	3.05	11.75	1.02
3.00	2.03	6.00	49.78	9.00	2.03	12.00	1.02

CALIB | STANDHYD (0042)| ID= 1 DT= 5.0 min	Area (ha)= 1.14 Total Imp(%)= 49.00 Dir. Conn.(%)= 49.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.56	0.58
Dep. Storage	(mm)=	1.00	1.50
Average Slope	(%)=	1.00	2.00
Length	(m)=	87.18	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.02	3.083	3.05	6.083	9.14	9.08	1.02
0.167	1.02	3.167	3.05	6.167	9.14	9.17	1.02
0.250	1.02	3.250	3.05	6.250	9.14	9.25	1.02
0.333	1.02	3.333	2.03	6.333	10.16	9.33	2.03
0.417	1.02	3.417	2.03	6.417	10.16	9.42	2.03
0.500	1.02	3.500	2.03	6.500	10.16	9.50	2.03
0.583	1.02	3.583	2.03	6.583	5.08	9.58	2.03
0.667	1.02	3.667	2.03	6.667	5.08	9.67	2.03
0.750	1.02	3.750	2.03	6.750	5.08	9.75	2.03
0.833	1.02	3.833	2.03	6.833	4.06	9.83	1.02
0.917	1.02	3.917	2.03	6.917	4.06	9.92	1.02
1.000	1.02	4.000	2.03	7.000	4.06	10.00	1.02
1.083	1.02	4.083	4.06	7.083	3.05	10.08	1.02
1.167	1.02	4.167	4.06	7.167	3.05	10.17	1.02
1.250	1.02	4.250	4.06	7.250	3.05	10.25	1.02
1.333	2.03	4.333	4.06	7.333	3.05	10.33	1.02
1.417	2.03	4.417	4.06	7.417	3.05	10.42	1.02
1.500	2.03	4.500	4.06	7.500	3.05	10.50	1.02
1.583	1.02	4.583	4.06	7.583	4.06	10.58	2.03
1.667	1.02	4.667	4.06	7.667	4.06	10.67	2.03
1.750	1.02	4.750	4.06	7.750	4.06	10.75	2.03
1.833	1.02	4.833	3.05	7.833	3.05	10.83	1.02
1.917	1.02	4.917	3.05	7.917	3.05	10.92	1.02
2.000	1.02	5.000	3.05	8.000	3.05	11.00	1.02
2.083	2.03	5.083	7.11	8.083	2.03	11.08	1.02
2.167	2.03	5.167	7.11	8.167	2.03	11.17	1.02
2.250	2.03	5.250	7.11	8.250	2.03	11.25	1.02
2.333	2.03	5.333	7.11	8.333	2.03	11.33	1.02
2.417	2.03	5.417	7.11	8.417	2.03	11.42	1.02

2.500	2.03	5.500	7.11	8.500	2.03	11.50	1.02
2.583	2.03	5.583	49.78	8.583	3.05	11.58	1.02
2.667	2.03	5.667	49.78	8.667	3.05	11.67	1.02
2.750	2.03	5.750	49.78	8.750	3.05	11.75	1.02
2.833	2.03	5.833	49.78	8.833	2.03	11.83	1.02
2.917	2.03	5.917	49.78	8.917	2.03	11.92	1.02
3.000	2.03	6.000	49.78	9.000	2.03	12.00	1.02

			TOTALS
Max.Eff.Inten.(mm/hr)=	49.78	29.18	
over (min)	5.00	15.00	
Storage Coeff. (min)=	3.11 (ii)	14.66 (ii)	
Unit Hyd. Tpeak (min)=	5.00	15.00	
Unit Hyd. peak (cms)=	0.27	0.08	
PEAK FLOW (cms)=	0.08	0.04	0.111 (iii)
TIME TO PEAK (hrs)=	6.00	6.08	6.00
RUNOFF VOLUME (mm)=	54.37	26.47	40.14
TOTAL RAINFALL (mm)=	55.37	55.37	55.37
RUNOFF COEFFICIENT =	0.98	0.48	0.72

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 82.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

RESERVOIR(0044)				
IN= 2---> OUT= 1				
DT= 5.0 min	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
	0.0000	0.0000	0.0160	0.0570

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0042)	1.140	0.111	6.00	40.14
OUTFLOW: ID= 1 (0044)	1.140	0.009	7.92	39.35

PEAK FLOW REDUCTION [Qout/Qin](%)= 7.93
TIME SHIFT OF PEAK FLOW (min)=115.00
MAXIMUM STORAGE USED (ha.m.)= 0.0314

READ STORM	Filename: C:\Users\ygollamudi\AppData\Local\Temp\e88bcada-d938-48ee-986c-873dd4f72d8d\bfafd6f8
Ptotal= 55.37 mm	Comments: 5yr

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	1.02	3.25	3.05	6.25	9.14	9.25	1.02
0.50	1.02	3.50	2.03	6.50	10.16	9.50	2.03
0.75	1.02	3.75	2.03	6.75	5.08	9.75	2.03
1.00	1.02	4.00	2.03	7.00	4.06	10.00	1.02
1.25	1.02	4.25	4.06	7.25	3.05	10.25	1.02
1.50	2.03	4.50	4.06	7.50	3.05	10.50	1.02
1.75	1.02	4.75	4.06	7.75	4.06	10.75	2.03
2.00	1.02	5.00	3.05	8.00	3.05	11.00	1.02
2.25	2.03	5.25	7.11	8.25	2.03	11.25	1.02
2.50	2.03	5.50	7.11	8.50	2.03	11.50	1.02
2.75	2.03	5.75	49.78	8.75	3.05	11.75	1.02
3.00	2.03	6.00	49.78	9.00	2.03	12.00	1.02

CALIB STANDHYD (0051) ID= 1 DT= 5.0 min	Area (ha)= 0.54 Total Imp(%)= 52.00 Dir. Conn.(%)= 52.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.28	0.26
Dep. Storage	(mm)=	1.00	1.50
Average Slope	(%)=	1.00	2.00
Length	(m)=	60.00	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.02	3.083	3.05	6.083	9.14	9.08	1.02
0.167	1.02	3.167	3.05	6.167	9.14	9.17	1.02
0.250	1.02	3.250	3.05	6.250	9.14	9.25	1.02
0.333	1.02	3.333	2.03	6.333	10.16	9.33	2.03
0.417	1.02	3.417	2.03	6.417	10.16	9.42	2.03
0.500	1.02	3.500	2.03	6.500	10.16	9.50	2.03
0.583	1.02	3.583	2.03	6.583	5.08	9.58	2.03
0.667	1.02	3.667	2.03	6.667	5.08	9.67	2.03
0.750	1.02	3.750	2.03	6.750	5.08	9.75	2.03
0.833	1.02	3.833	2.03	6.833	4.06	9.83	1.02
0.917	1.02	3.917	2.03	6.917	4.06	9.92	1.02
1.000	1.02	4.000	2.03	7.000	4.06	10.00	1.02
1.083	1.02	4.083	4.06	7.083	3.05	10.08	1.02
1.167	1.02	4.167	4.06	7.167	3.05	10.17	1.02
1.250	1.02	4.250	4.06	7.250	3.05	10.25	1.02
1.333	2.03	4.333	4.06	7.333	3.05	10.33	1.02
1.417	2.03	4.417	4.06	7.417	3.05	10.42	1.02
1.500	2.03	4.500	4.06	7.500	3.05	10.50	1.02
1.583	1.02	4.583	4.06	7.583	4.06	10.58	2.03
1.667	1.02	4.667	4.06	7.667	4.06	10.67	2.03
1.750	1.02	4.750	4.06	7.750	4.06	10.75	2.03
1.833	1.02	4.833	3.05	7.833	3.05	10.83	1.02
1.917	1.02	4.917	3.05	7.917	3.05	10.92	1.02
2.000	1.02	5.000	3.05	8.000	3.05	11.00	1.02
2.083	2.03	5.083	7.11	8.083	2.03	11.08	1.02
2.167	2.03	5.167	7.11	8.167	2.03	11.17	1.02
2.250	2.03	5.250	7.11	8.250	2.03	11.25	1.02
2.333	2.03	5.333	7.11	8.333	2.03	11.33	1.02
2.417	2.03	5.417	7.11	8.417	2.03	11.42	1.02
2.500	2.03	5.500	7.11	8.500	2.03	11.50	1.02
2.583	2.03	5.583	49.78	8.583	3.05	11.58	1.02
2.667	2.03	5.667	49.78	8.667	3.05	11.67	1.02
2.750	2.03	5.750	49.78	8.750	3.05	11.75	1.02
2.833	2.03	5.833	49.78	8.833	2.03	11.83	1.02

2.917	2.03	5.917	49.78	8.917	2.03	11.92	1.02
3.000	2.03	6.000	49.78	9.000	2.03	12.00	1.02

Max.Eff.Inten.(mm/hr)=	49.78	29.18	
over (min)	5.00	15.00	
Storage Coeff. (min)=	2.49 (ii)	14.04 (ii)	
Unit Hyd. Tpeak (min)=	5.00	15.00	
Unit Hyd. peak (cms)=	0.29	0.08	
			TOTALS
PEAK FLOW (cms)=	0.04	0.02	0.054 (iii)
TIME TO PEAK (hrs)=	6.00	6.08	6.00
RUNOFF VOLUME (mm)=	54.37	26.47	40.97
TOTAL RAINFALL (mm)=	55.37	55.37	55.37
RUNOFF COEFFICIENT =	0.98	0.48	0.74

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 82.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

RESERVOIR(0045)|				
IN= 2---> OUT= 1 |				
DT= 5.0 min |	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
	0.0000	0.0000	0.0090	0.0260

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0051)	0.540	0.054	6.00	40.97
OUTFLOW: ID= 1 (0045)	0.540	0.005	7.08	39.62

PEAK FLOW REDUCTION [Qout/Qin](%)= 9.34
TIME SHIFT OF PEAK FLOW (min)= 65.00
MAXIMUM STORAGE USED (ha.m.)= 0.0146

READ STORM |	Filename: C:\Users\ygollamudi\AppData\Local\Temp\e88bcada-d938-48ee-986c-873dd4f72d8d\bfafd6f8
Ptotal= 55.37 mm |	Comments: 5yr

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	1.02	3.25	3.05	6.25	9.14	9.25	1.02
0.50	1.02	3.50	2.03	6.50	10.16	9.50	2.03
0.75	1.02	3.75	2.03	6.75	5.08	9.75	2.03
1.00	1.02	4.00	2.03	7.00	4.06	10.00	1.02
1.25	1.02	4.25	4.06	7.25	3.05	10.25	1.02
1.50	2.03	4.50	4.06	7.50	3.05	10.50	1.02
1.75	1.02	4.75	4.06	7.75	4.06	10.75	2.03
2.00	1.02	5.00	3.05	8.00	3.05	11.00	1.02
2.25	2.03	5.25	7.11	8.25	2.03	11.25	1.02
2.50	2.03	5.50	7.11	8.50	2.03	11.50	1.02
2.75	2.03	5.75	49.78	8.75	3.05	11.75	1.02
3.00	2.03	6.00	49.78	9.00	2.03	12.00	1.02

CALIB |			
STANDHYD (0046)|	Area (ha)= 3.47		
ID= 1 DT= 5.0 min |	Total Imp(%)= 60.00	Dir. Conn.(%)= 60.00	
	IMPERVIOUS	PERVIOUS (i)	
Surface Area (ha)=	2.08	1.39	
Dep. Storage (mm)=	1.00	1.50	
Average Slope (%)=	1.00	2.00	
Length (m)=	152.10	40.00	
Mannings n =	0.013	0.250	

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.02	3.083	3.05	6.083	9.14	9.08	1.02
0.167	1.02	3.167	3.05	6.167	9.14	9.17	1.02
0.250	1.02	3.250	3.05	6.250	9.14	9.25	1.02
0.333	1.02	3.333	2.03	6.333	10.16	9.33	2.03
0.417	1.02	3.417	2.03	6.417	10.16	9.42	2.03
0.500	1.02	3.500	2.03	6.500	10.16	9.50	2.03
0.583	1.02	3.583	2.03	6.583	5.08	9.58	2.03
0.667	1.02	3.667	2.03	6.667	5.08	9.67	2.03
0.750	1.02	3.750	2.03	6.750	5.08	9.75	2.03
0.833	1.02	3.833	2.03	6.833	4.06	9.83	1.02
0.917	1.02	3.917	2.03	6.917	4.06	9.92	1.02
1.000	1.02	4.000	2.03	7.000	4.06	10.00	1.02
1.083	1.02	4.083	4.06	7.083	3.05	10.08	1.02
1.167	1.02	4.167	4.06	7.167	3.05	10.17	1.02
1.250	1.02	4.250	4.06	7.250	3.05	10.25	1.02
1.333	2.03	4.333	4.06	7.333	3.05	10.33	1.02
1.417	2.03	4.417	4.06	7.417	3.05	10.42	1.02
1.500	2.03	4.500	4.06	7.500	3.05	10.50	1.02
1.583	1.02	4.583	4.06	7.583	4.06	10.58	2.03
1.667	1.02	4.667	4.06	7.667	4.06	10.67	2.03
1.750	1.02	4.750	4.06	7.750	4.06	10.75	2.03
1.833	1.02	4.833	3.05	7.833	3.05	10.83	1.02
1.917	1.02	4.917	3.05	7.917	3.05	10.92	1.02
2.000	1.02	5.000	3.05	8.000	3.05	11.00	1.02
2.083	2.03	5.083	7.11	8.083	2.03	11.08	1.02
2.167	2.03	5.167	7.11	8.167	2.03	11.17	1.02
2.250	2.03	5.250	7.11	8.250	2.03	11.25	1.02
2.333	2.03	5.333	7.11	8.333	2.03	11.33	1.02
2.417	2.03	5.417	7.11	8.417	2.03	11.42	1.02
2.500	2.03	5.500	7.11	8.500	2.03	11.50	1.02
2.583	2.03	5.583	49.78	8.583	3.05	11.58	1.02
2.667	2.03	5.667	49.78	8.667	3.05	11.67	1.02
2.750	2.03	5.750	49.78	8.750	3.05	11.75	1.02
2.833	2.03	5.833	49.78	8.833	2.03	11.83	1.02
2.917	2.03	5.917	49.78	8.917	2.03	11.92	1.02
3.000	2.03	6.000	49.78	9.000	2.03	12.00	1.02

Max.Eff.Inten.(mm/hr)=	49.78	29.18
over (min)	5.00	20.00

Storage Coeff. (min)=	4.34 (ii)	15.89 (ii)	
Unit Hyd. Tpeak (min)=	5.00	20.00	
Unit Hyd. peak (cms)=	0.23	0.07	
			TOTALS
PEAK FLOW (cms)=	0.29	0.08	0.359 (iii)
TIME TO PEAK (hrs)=	6.00	6.17	6.00
RUNOFF VOLUME (mm)=	54.37	26.47	43.21
TOTAL RAINFALL (mm)=	55.37	55.37	55.37
RUNOFF COEFFICIENT =	0.98	0.48	0.78

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 82.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

RESERVOIR(0047)				
IN= 2---> OUT= 1				
DT= 5.0 min	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
	0.0000	0.0000	0.0670	0.1700

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0046)	3.470	0.359	6.00	43.21
OUTFLOW: ID= 1 (0047)	3.470	0.038	7.08	43.02

PEAK FLOW REDUCTION [Qout/Qin](%)= 10.66
TIME SHIFT OF PEAK FLOW (min)= 65.00
MAXIMUM STORAGE USED (ha.m.)= 0.0971

READ STORM	Filename: C:\Users\ygollamudi\AppData\Local\Temp\e88bcada-d938-48ee-986c-873dd4f72d8d\bfafd6f8
Ptotal= 55.37 mm	Comments: 5yr

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	1.02	3.25	3.05	6.25	9.14	9.25	1.02
0.50	1.02	3.50	2.03	6.50	10.16	9.50	2.03
0.75	1.02	3.75	2.03	6.75	5.08	9.75	2.03
1.00	1.02	4.00	2.03	7.00	4.06	10.00	1.02
1.25	1.02	4.25	4.06	7.25	3.05	10.25	1.02
1.50	2.03	4.50	4.06	7.50	3.05	10.50	1.02
1.75	1.02	4.75	4.06	7.75	4.06	10.75	2.03
2.00	1.02	5.00	3.05	8.00	3.05	11.00	1.02
2.25	2.03	5.25	7.11	8.25	2.03	11.25	1.02
2.50	2.03	5.50	7.11	8.50	2.03	11.50	1.02
2.75	2.03	5.75	49.78	8.75	3.05	11.75	1.02
3.00	2.03	6.00	49.78	9.00	2.03	12.00	1.02

CALIB	
STANDHYD (0041)	Area (ha)= 1.62
ID= 1 DT= 5.0 min	Total Imp(%)= 46.00 Dir. Conn.(%)= 46.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.75	0.87
Dep. Storage	(mm)=	1.00	1.50
Average Slope	(%)=	1.00	2.00
Length	(m)=	103.92	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.02	3.083	3.05	6.083	9.14	9.08	1.02
0.167	1.02	3.167	3.05	6.167	9.14	9.17	1.02
0.250	1.02	3.250	3.05	6.250	9.14	9.25	1.02
0.333	1.02	3.333	2.03	6.333	10.16	9.33	2.03
0.417	1.02	3.417	2.03	6.417	10.16	9.42	2.03
0.500	1.02	3.500	2.03	6.500	10.16	9.50	2.03
0.583	1.02	3.583	2.03	6.583	5.08	9.58	2.03
0.667	1.02	3.667	2.03	6.667	5.08	9.67	2.03
0.750	1.02	3.750	2.03	6.750	5.08	9.75	2.03
0.833	1.02	3.833	2.03	6.833	4.06	9.83	1.02
0.917	1.02	3.917	2.03	6.917	4.06	9.92	1.02
1.000	1.02	4.000	2.03	7.000	4.06	10.00	1.02
1.083	1.02	4.083	4.06	7.083	3.05	10.08	1.02
1.167	1.02	4.167	4.06	7.167	3.05	10.17	1.02
1.250	1.02	4.250	4.06	7.250	3.05	10.25	1.02
1.333	2.03	4.333	4.06	7.333	3.05	10.33	1.02
1.417	2.03	4.417	4.06	7.417	3.05	10.42	1.02
1.500	2.03	4.500	4.06	7.500	3.05	10.50	1.02
1.583	1.02	4.583	4.06	7.583	4.06	10.58	2.03
1.667	1.02	4.667	4.06	7.667	4.06	10.67	2.03
1.750	1.02	4.750	4.06	7.750	4.06	10.75	2.03
1.833	1.02	4.833	3.05	7.833	3.05	10.83	1.02
1.917	1.02	4.917	3.05	7.917	3.05	10.92	1.02
2.000	1.02	5.000	3.05	8.000	3.05	11.00	1.02
2.083	2.03	5.083	7.11	8.083	2.03	11.08	1.02
2.167	2.03	5.167	7.11	8.167	2.03	11.17	1.02
2.250	2.03	5.250	7.11	8.250	2.03	11.25	1.02
2.333	2.03	5.333	7.11	8.333	2.03	11.33	1.02
2.417	2.03	5.417	7.11	8.417	2.03	11.42	1.02
2.500	2.03	5.500	7.11	8.500	2.03	11.50	1.02
2.583	2.03	5.583	49.78	8.583	3.05	11.58	1.02
2.667	2.03	5.667	49.78	8.667	3.05	11.67	1.02
2.750	2.03	5.750	49.78	8.750	3.05	11.75	1.02
2.833	2.03	5.833	49.78	8.833	2.03	11.83	1.02
2.917	2.03	5.917	49.78	8.917	2.03	11.92	1.02
3.000	2.03	6.000	49.78	9.000	2.03	12.00	1.02

Max.Eff.Inten.(mm/hr)=		49.78	33.46	
over (min)		5.00	15.00	
Storage Coeff. (min)=		3.46 (ii)	14.39 (ii)	
Unit Hyd. Tpeak (min)=		5.00	15.00	
Unit Hyd. peak (cms)=		0.26	0.08	
				TOTALS
PEAK FLOW	(cms)=	0.10	0.06	0.163 (iii)

```
     TIME TO PEAK    (hrs)=       6.00         6.08          6.00
     RUNOFF VOLUME    (mm)=      54.37        30.48         41.46
     TOTAL RAINFALL   (mm)=      55.37        55.37         55.37
     RUNOFF COEFFICIENT   =       0.98         0.55          0.75

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  86.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------
--------------------
| RESERVOIR(  0048)|
| IN= 2---> OUT= 1 |
| DT=  5.0 min     |     OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
--------------------      (cms)     (ha.m.)   |   (cms)     (ha.m.)
                          0.0000     0.0000   |   0.0570     0.0650

                               AREA     QPEAK     TPEAK       R.V.
                               (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  0041)     1.620     0.163      6.00      41.46
   OUTFLOW: ID= 1 (  0048)     1.620     0.032      6.67      41.29

                  PEAK   FLOW   REDUCTION [Qout/Qin](%)= 19.34
                  TIME SHIFT OF PEAK FLOW         (min)= 40.00
                  MAXIMUM  STORAGE   USED       (ha.m.)=  0.0360

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|    READ STORM    |    Filename: C:\Users\ygollamudi\AppD
|                  |              ata\Local\Temp\
|                  |              e88bcada-d938-48ee-986c-873dd4f72d8d\bfafd6f8
| Ptotal= 55.37 mm |    Comments: 5yr
--------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.25    1.02 |  3.25    3.05 |  6.25    9.14 |  9.25    1.02
                0.50    1.02 |  3.50    2.03 |  6.50   10.16 |  9.50    2.03
                0.75    1.02 |  3.75    2.03 |  6.75    5.08 |  9.75    2.03
                1.00    1.02 |  4.00    2.03 |  7.00    4.06 | 10.00    1.02
                1.25    1.02 |  4.25    4.06 |  7.25    3.05 | 10.25    1.02
                1.50    2.03 |  4.50    4.06 |  7.50    3.05 | 10.50    1.02
                1.75    1.02 |  4.75    4.06 |  7.75    4.06 | 10.75    2.03
                2.00    1.02 |  5.00    3.05 |  8.00    3.05 | 11.00    1.02
                2.25    2.03 |  5.25    7.11 |  8.25    2.03 | 11.25    1.02
                2.50    2.03 |  5.50    7.11 |  8.50    2.03 | 11.50    1.02
                2.75    2.03 |  5.75   49.78 |  8.75    3.05 | 11.75    1.02
                3.00    2.03 |  6.00   49.78 |  9.00    2.03 | 12.00    1.02

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--------------------
| CALIB            |
| STANDHYD (  0049)|   Area    (ha)=   1.63
|ID= 1 DT= 5.0 min |   Total Imp(%)=  40.00   Dir. Conn.(%)=  40.00
--------------------
                           IMPERVIOUS    PERVIOUS (i)
Surface Area     (ha)=       0.65         0.98
Dep. Storage     (mm)=       1.00         1.50
Average Slope     (%)=       1.00         2.00
Length            (m)=     104.24        40.00
Mannings n           =      0.013        0.250

    NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                        ---- TRANSFORMED HYETOGRAPH ----
          TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
           hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
         0.083    1.02 | 3.083    3.05 | 6.083    9.14 |  9.08    1.02
         0.167    1.02 | 3.167    3.05 | 6.167    9.14 |  9.17    1.02
         0.250    1.02 | 3.250    3.05 | 6.250    9.14 |  9.25    1.02
         0.333    1.02 | 3.333    2.03 | 6.333   10.16 |  9.33    2.03
         0.417    1.02 | 3.417    2.03 | 6.417   10.16 |  9.42    2.03
         0.500    1.02 | 3.500    2.03 | 6.500   10.16 |  9.50    2.03
         0.583    1.02 | 3.583    2.03 | 6.583    5.08 |  9.58    2.03
         0.667    1.02 | 3.667    2.03 | 6.667    5.08 |  9.67    2.03
         0.750    1.02 | 3.750    2.03 | 6.750    5.08 |  9.75    2.03
         0.833    1.02 | 3.833    2.03 | 6.833    4.06 |  9.83    1.02
         0.917    1.02 | 3.917    2.03 | 6.917    4.06 |  9.92    1.02
         1.000    1.02 | 4.000    2.03 | 7.000    4.06 | 10.00    1.02
         1.083    1.02 | 4.083    4.06 | 7.083    3.05 | 10.08    1.02
         1.167    1.02 | 4.167    4.06 | 7.167    3.05 | 10.17    1.02
         1.250    1.02 | 4.250    4.06 | 7.250    3.05 | 10.25    1.02
         1.333    2.03 | 4.333    4.06 | 7.333    3.05 | 10.33    1.02
         1.417    2.03 | 4.417    4.06 | 7.417    3.05 | 10.42    1.02
         1.500    2.03 | 4.500    4.06 | 7.500    3.05 | 10.50    1.02
         1.583    1.02 | 4.583    4.06 | 7.583    4.06 | 10.58    2.03
         1.667    1.02 | 4.667    4.06 | 7.667    4.06 | 10.67    2.03
         1.750    1.02 | 4.750    4.06 | 7.750    4.06 | 10.75    2.03
         1.833    1.02 | 4.833    3.05 | 7.833    3.05 | 10.83    1.02
         1.917    1.02 | 4.917    3.05 | 7.917    3.05 | 10.92    1.02
         2.000    1.02 | 5.000    3.05 | 8.000    3.05 | 11.00    1.02
         2.083    2.03 | 5.083    7.11 | 8.083    2.03 | 11.08    1.02
         2.167    2.03 | 5.167    7.11 | 8.167    2.03 | 11.17    1.02
         2.250    2.03 | 5.250    7.11 | 8.250    2.03 | 11.25    1.02
         2.333    2.03 | 5.333    7.11 | 8.333    2.03 | 11.33    1.02
         2.417    2.03 | 5.417    7.11 | 8.417    2.03 | 11.42    1.02
         2.500    2.03 | 5.500    7.11 | 8.500    2.03 | 11.50    1.02
         2.583    2.03 | 5.583   49.78 | 8.583    3.05 | 11.58    1.02
         2.667    2.03 | 5.667   49.78 | 8.667    3.05 | 11.67    1.02
         2.750    2.03 | 5.750   49.78 | 8.750    3.05 | 11.75    1.02
         2.833    2.03 | 5.833   49.78 | 8.833    2.03 | 11.83    1.02
         2.917    2.03 | 5.917   49.78 | 8.917    2.03 | 11.92    1.02
         3.000    2.03 | 6.000   49.78 | 9.000    2.03 | 12.00    1.02

Max.Eff.Inten.(mm/hr)=      49.78        29.18
          over (min)         5.00        20.00
Storage Coeff.  (min)=       3.46 (ii)   15.01 (ii)
Unit Hyd. Tpeak (min)=       5.00        20.00
Unit Hyd. peak  (cms)=       0.26         0.07
                                                  *TOTALS*
PEAK FLOW       (cms)=       0.09         0.06       0.142 (iii)
TIME TO PEAK    (hrs)=       6.00         6.08        6.00
RUNOFF VOLUME    (mm)=      54.37        26.47       37.63
TOTAL RAINFALL   (mm)=      55.37        55.37       55.37
RUNOFF COEFFICIENT   =       0.98         0.48        0.68
```

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***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

      (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN*  =  82.0    Ia = Dep. Storage  (Above)
     (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
          THAN THE STORAGE COEFFICIENT.
    (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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--------------------
| RESERVOIR(  0050)|
| IN= 2---> OUT= 1 |
| DT=  5.0 min     |     OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
--------------------      (cms)     (ha.m.)   |   (cms)     (ha.m.)
                          0.0000     0.0000   |   0.0300     0.0710

                               AREA     QPEAK     TPEAK       R.V.
                               (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  0049)     1.630     0.142      6.00      37.63
   OUTFLOW: ID= 1 (  0050)     1.630     0.016      7.17      37.26

                  PEAK   FLOW   REDUCTION [Qout/Qin](%)= 11.55
                  TIME SHIFT OF PEAK FLOW         (min)= 70.00
                  MAXIMUM  STORAGE   USED       (ha.m.)=  0.0387

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================================================================================
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       V    V   I    SSSSS  U   U    A    L
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

        OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
       O   O    T      T    H   H   Y Y   MM MM  O   O
       O   O    T      T    H   H    Y    M   M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
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                  *****  D E T A I L E D   O U T P U T *****


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 5.0\VO2\voin.dat
  Output  filename: C:\Users\ygollamudi\AppData\Local\Civica\VH5\10c26041-43a5-
4194-90ea-ce2e7e4124a0\890cf403-2056-4312-a605-15291e18244e\s
  Summary filename: C:\Users\ygollamudi\AppData\Local\Civica\VH5\10c26041-43a5-
4194-90ea-ce2e7e4124a0\890cf403-2056-4312-a605-15291e18244e\s


DATE: 08-28-2019                          TIME: 04:19:44

USER:



COMMENTS: _____________________________________________________________
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  *********************************************
  ** SIMULATION : Run 03                     **
  *********************************************


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|    READ STORM    |    Filename: C:\Users\ygollamudi\AppD
|                  |              ata\Local\Temp\
|                  |              e88bcada-d938-48ee-986c-873dd4f72d8d\a8794606
| Ptotal= 63.75 mm |    Comments: 10yr
--------------------
```

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	1.02	3.25	3.05	6.25	11.18	9.25	2.03
0.50	2.03	3.50	2.03	6.50	11.18	9.50	2.03
0.75	1.02	3.75	3.05	6.75	5.08	9.75	2.03
1.00	1.02	4.00	2.03	7.00	5.08	10.00	2.03
1.25	1.02	4.25	5.08	7.25	4.06	10.25	1.02
1.50	2.03	4.50	4.06	7.50	4.06	10.50	1.02
1.75	1.02	4.75	4.06	7.75	4.06	10.75	2.03
2.00	1.02	5.00	5.08	8.00	3.05	11.00	1.02
2.25	3.05	5.25	7.11	8.25	3.05	11.25	1.02
2.50	2.03	5.50	8.13	8.50	2.03	11.50	1.02
2.75	3.05	5.75	56.90	8.75	3.05	11.75	2.03
3.00	2.03	6.00	57.91	9.00	2.03	12.00	1.02

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| CALIB            |
| STANDHYD (  0040)|   Area    (ha)=   0.61
|ID= 1 DT= 5.0 min |   Total Imp(%)=  48.00   Dir. Conn.(%)=  48.00
--------------------
                                IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.29          0.32
     Dep. Storage     (mm)=       1.00          1.50
     Average Slope     (%)=       1.00          2.00
     Length            (m)=      63.77         40.00
     Mannings n             =     0.013         0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.
```

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.02	3.083	3.05	6.083	11.18	9.08	2.03
0.167	1.02	3.167	3.05	6.167	11.18	9.17	2.03
0.250	1.02	3.250	3.05	6.250	11.18	9.25	2.03
0.333	2.03	3.333	2.03	6.333	11.18	9.33	2.03
0.417	2.03	3.417	2.03	6.417	11.18	9.42	2.03
0.500	2.03	3.500	2.03	6.500	11.18	9.50	2.03
0.583	1.02	3.583	3.05	6.583	5.08	9.58	2.03
0.667	1.02	3.667	3.05	6.667	5.08	9.67	2.03
0.750	1.02	3.750	3.05	6.750	5.08	9.75	2.03
0.833	1.02	3.833	2.03	6.833	5.08	9.83	2.03
0.917	1.02	3.917	2.03	6.917	5.08	9.92	2.03

1.000	1.02	4.000	2.03	7.000	5.08	10.00	2.03
1.083	1.02	4.083	5.08	7.083	4.06	10.08	1.02
1.167	1.02	4.167	5.08	7.167	4.06	10.17	1.02
1.250	1.02	4.250	5.08	7.250	4.06	10.25	1.02
1.333	2.03	4.333	4.06	7.333	4.06	10.33	1.02
1.417	2.03	4.417	4.06	7.417	4.06	10.42	1.02
1.500	2.03	4.500	4.06	7.500	4.06	10.50	1.02
1.583	1.02	4.583	4.06	7.583	4.06	10.58	2.03
1.667	1.02	4.667	4.06	7.667	4.06	10.67	2.03
1.750	1.02	4.750	4.06	7.750	4.06	10.75	2.03
1.833	1.02	4.833	5.08	7.833	3.05	10.83	1.02
1.917	1.02	4.917	5.08	7.917	3.05	10.92	1.02
2.000	1.02	5.000	5.08	8.000	3.05	11.00	1.02
2.083	3.05	5.083	7.11	8.083	3.05	11.08	1.02
2.167	3.05	5.167	7.11	8.167	3.05	11.17	1.02
2.250	3.05	5.250	7.11	8.250	3.05	11.25	1.02
2.333	2.03	5.333	8.13	8.333	2.03	11.33	1.02
2.417	2.03	5.417	8.13	8.417	2.03	11.42	1.02
2.500	2.03	5.500	8.13	8.500	2.03	11.50	1.02
2.583	3.05	5.583	56.90	8.583	3.05	11.58	2.03
2.667	3.05	5.667	56.90	8.667	3.05	11.67	2.03
2.750	3.05	5.750	56.90	8.750	3.05	11.75	2.03
2.833	2.03	5.833	57.91	8.833	2.03	11.83	1.02
2.917	2.03	5.917	57.91	8.917	2.03	11.92	1.02
3.000	2.03	6.000	57.91	9.000	2.03	12.00	1.02

			TOTALS
Max.Eff.Inten.(mm/hr)=	57.91	36.38	
over (min)	5.00	15.00	
Storage Coeff. (min)=	2.43 (ii)	13.00 (ii)	
Unit Hyd. Tpeak (min)=	5.00	15.00	
Unit Hyd. peak (cms)=	0.30	0.08	
PEAK FLOW (cms)=	0.05	0.02	0.071 (iii)
TIME TO PEAK (hrs)=	6.00	6.08	6.00
RUNOFF VOLUME (mm)=	62.75	32.84	47.18
TOTAL RAINFALL (mm)=	63.75	63.75	63.75
RUNOFF COEFFICIENT =	0.98	0.52	0.74

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 82.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

RESERVOIR(0043)				
IN= 2---> OUT= 1				
DT= 5.0 min	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
	0.0000	0.0000	0.0100	0.0295

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0040)	0.610	0.071	6.00	47.18
OUTFLOW: ID= 1 (0043)	0.610	0.006	7.25	45.96

PEAK FLOW REDUCTION [Qout/Qin](%)= 9.06
TIME SHIFT OF PEAK FLOW (min)= 75.00

MAXIMUM STORAGE USED (ha.m.)= 0.0191

READ STORM	Filename: C:\Users\ygollamudi\AppData\Local\Temp\e88bcada-d938-48ee-986c-873dd4f72d8d\a8794606
Ptotal= 63.75 mm	Comments: 10yr

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	1.02	3.25	3.05	6.25	11.18	9.25	2.03
0.50	2.03	3.50	2.03	6.50	11.18	9.50	2.03
0.75	1.02	3.75	3.05	6.75	5.08	9.75	2.03
1.00	1.02	4.00	2.03	7.00	5.08	10.00	2.03
1.25	1.02	4.25	5.08	7.25	4.06	10.25	1.02
1.50	2.03	4.50	4.06	7.50	4.06	10.50	1.02
1.75	1.02	4.75	4.06	7.75	4.06	10.75	2.03
2.00	1.02	5.00	5.08	8.00	3.05	11.00	1.02
2.25	3.05	5.25	7.11	8.25	3.05	11.25	1.02
2.50	2.03	5.50	8.13	8.50	2.03	11.50	1.02
2.75	3.05	5.75	56.90	8.75	3.05	11.75	2.03
3.00	2.03	6.00	57.91	9.00	2.03	12.00	1.02

CALIB	
STANDHYD (0042)	Area (ha)= 1.14
ID= 1 DT= 5.0 min	Total Imp(%)= 49.00 Dir. Conn.(%)= 49.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.56	0.58
Dep. Storage	(mm)=	1.00	1.50
Average Slope	(%)=	1.00	2.00
Length	(m)=	87.18	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.02	3.083	3.05	6.083	11.18	9.08	2.03
0.167	1.02	3.167	3.05	6.167	11.18	9.17	2.03
0.250	1.02	3.250	3.05	6.250	11.18	9.25	2.03
0.333	2.03	3.333	2.03	6.333	11.18	9.33	2.03
0.417	2.03	3.417	2.03	6.417	11.18	9.42	2.03
0.500	2.03	3.500	2.03	6.500	11.18	9.50	2.03
0.583	1.02	3.583	3.05	6.583	5.08	9.58	2.03
0.667	1.02	3.667	3.05	6.667	5.08	9.67	2.03
0.750	1.02	3.750	3.05	6.750	5.08	9.75	2.03
0.833	1.02	3.833	2.03	6.833	5.08	9.83	2.03
0.917	1.02	3.917	2.03	6.917	5.08	9.92	2.03
1.000	1.02	4.000	2.03	7.000	5.08	10.00	2.03
1.083	1.02	4.083	5.08	7.083	4.06	10.08	1.02
1.167	1.02	4.167	5.08	7.167	4.06	10.17	1.02
1.250	1.02	4.250	5.08	7.250	4.06	10.25	1.02
1.333	2.03	4.333	4.06	7.333	4.06	10.33	1.02

1.417	2.03	4.417	4.06	7.417	4.06	10.42	1.02
1.500	2.03	4.500	4.06	7.500	4.06	10.50	1.02
1.583	1.02	4.583	4.06	7.583	4.06	10.58	2.03
1.667	1.02	4.667	4.06	7.667	4.06	10.67	2.03
1.750	1.02	4.750	4.06	7.750	4.06	10.75	2.03
1.833	1.02	4.833	5.08	7.833	3.05	10.83	1.02
1.917	1.02	4.917	5.08	7.917	3.05	10.92	1.02
2.000	1.02	5.000	5.08	8.000	3.05	11.00	1.02
2.083	3.05	5.083	7.11	8.083	3.05	11.08	1.02
2.167	3.05	5.167	7.11	8.167	3.05	11.17	1.02
2.250	3.05	5.250	7.11	8.250	3.05	11.25	1.02
2.333	2.03	5.333	8.13	8.333	2.03	11.33	1.02
2.417	2.03	5.417	8.13	8.417	2.03	11.42	1.02
2.500	2.03	5.500	8.13	8.500	2.03	11.50	1.02
2.583	3.05	5.583	56.90	8.583	3.05	11.58	2.03
2.667	3.05	5.667	56.90	8.667	3.05	11.67	2.03
2.750	3.05	5.750	56.90	8.750	3.05	11.75	2.03
2.833	2.03	5.833	57.91	8.833	2.03	11.83	1.02
2.917	2.03	5.917	57.91	8.917	2.03	11.92	1.02
3.000	2.03	6.000	57.91	9.000	2.03	12.00	1.02

			TOTALS
Max.Eff.Inten.(mm/hr)=	57.91	36.38	
over (min)	5.00	15.00	
Storage Coeff. (min)=	2.93 (ii)	13.50 (ii)	
Unit Hyd. Tpeak (min)=	5.00	15.00	
Unit Hyd. peak (cms)=	0.28	0.08	
PEAK FLOW (cms)=	0.09	0.05	0.134 (iii)
TIME TO PEAK (hrs)=	6.00	6.08	6.00
RUNOFF VOLUME (mm)=	62.75	32.84	47.49
TOTAL RAINFALL (mm)=	63.75	63.75	63.75
RUNOFF COEFFICIENT =	0.98	0.52	0.74

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 82.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

RESERVOIR(0044) IN= 2---> OUT= 1 DT= 5.0 min	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
	0.0000	0.0000	0.0160	0.0570

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0042)	1.140	0.134	6.00	47.49
OUTFLOW: ID= 1 (0044)	1.140	0.010	7.83	46.70

PEAK FLOW REDUCTION [Qout/Qin](%)= 7.82
TIME SHIFT OF PEAK FLOW (min)=110.00
MAXIMUM STORAGE USED (ha.m.)= 0.0373

READ STORM	Filename: C:\Users\ygollamudi\AppData\Local\Temp\e88bcada-d938-48ee-986c-873dd4f72d8d\a8794606 Comments: 10yr
Ptotal= 63.75 mm	

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	1.02	3.25	3.05	6.25	11.18	9.25	2.03
0.50	2.03	3.50	2.03	6.50	11.18	9.50	2.03
0.75	1.02	3.75	3.05	6.75	5.08	9.75	2.03
1.00	1.02	4.00	2.03	7.00	5.08	10.00	2.03
1.25	1.02	4.25	5.08	7.25	4.06	10.25	1.02
1.50	2.03	4.50	4.06	7.50	4.06	10.50	1.02
1.75	1.02	4.75	4.06	7.75	4.06	10.75	2.03
2.00	1.02	5.00	5.08	8.00	3.05	11.00	1.02
2.25	3.05	5.25	7.11	8.25	3.05	11.25	1.02
2.50	2.03	5.50	8.13	8.50	2.03	11.50	1.02
2.75	3.05	5.75	56.90	8.75	3.05	11.75	2.03
3.00	2.03	6.00	57.91	9.00	2.03	12.00	1.02

CALIB STANDHYD (0051) ID= 1 DT= 5.0 min	Area (ha)= 0.54 Total Imp(%)= 52.00 Dir. Conn.(%)= 52.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.28	0.26
Dep. Storage	(mm)=	1.00	1.50
Average Slope	(%)=	1.00	2.00
Length	(m)=	60.00	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.02	3.083	3.05	6.083	11.18	9.08	2.03
0.167	1.02	3.167	3.05	6.167	11.18	9.17	2.03
0.250	1.02	3.250	3.05	6.250	11.18	9.25	2.03
0.333	2.03	3.333	2.03	6.333	11.18	9.33	2.03
0.417	2.03	3.417	2.03	6.417	11.18	9.42	2.03
0.500	2.03	3.500	2.03	6.500	11.18	9.50	2.03
0.583	1.02	3.583	3.05	6.583	5.08	9.58	2.03
0.667	1.02	3.667	3.05	6.667	5.08	9.67	2.03
0.750	1.02	3.750	3.05	6.750	5.08	9.75	2.03
0.833	1.02	3.833	2.03	6.833	5.08	9.83	2.03
0.917	1.02	3.917	2.03	6.917	5.08	9.92	2.03
1.000	1.02	4.000	2.03	7.000	5.08	10.00	2.03
1.083	1.02	4.083	5.08	7.083	4.06	10.08	1.02
1.167	1.02	4.167	5.08	7.167	4.06	10.17	1.02
1.250	1.02	4.250	5.08	7.250	4.06	10.25	1.02
1.333	2.03	4.333	4.06	7.333	4.06	10.33	1.02
1.417	2.03	4.417	4.06	7.417	4.06	10.42	1.02
1.500	2.03	4.500	4.06	7.500	4.06	10.50	1.02
1.583	1.02	4.583	4.06	7.583	4.06	10.58	2.03
1.667	1.02	4.667	4.06	7.667	4.06	10.67	2.03
1.750	1.02	4.750	4.06	7.750	4.06	10.75	2.03

1.833	1.02	4.833	5.08	7.833	3.05	10.83	1.02
1.917	1.02	4.917	5.08	7.917	3.05	10.92	1.02
2.000	1.02	5.000	5.08	8.000	3.05	11.00	1.02
2.083	3.05	5.083	7.11	8.083	3.05	11.08	1.02
2.167	3.05	5.167	7.11	8.167	3.05	11.17	1.02
2.250	3.05	5.250	7.11	8.250	3.05	11.25	1.02
2.333	2.03	5.333	8.13	8.333	2.03	11.33	1.02
2.417	2.03	5.417	8.13	8.417	2.03	11.42	1.02
2.500	2.03	5.500	8.13	8.500	2.03	11.50	1.02
2.583	3.05	5.583	56.90	8.583	3.05	11.58	2.03
2.667	3.05	5.667	56.90	8.667	3.05	11.67	2.03
2.750	3.05	5.750	56.90	8.750	3.05	11.75	2.03
2.833	2.03	5.833	57.91	8.833	2.03	11.83	1.02
2.917	2.03	5.917	57.91	8.917	2.03	11.92	1.02
3.000	2.03	6.000	57.91	9.000	2.03	12.00	1.02

			TOTALS
Max.Eff.Inten.(mm/hr)=	57.91	36.38	
over (min)	5.00	15.00	
Storage Coeff. (min)=	2.34 (ii)	12.92 (ii)	
Unit Hyd. Tpeak (min)=	5.00	15.00	
Unit Hyd. peak (cms)=	0.30	0.08	
PEAK FLOW (cms)=	0.05	0.02	0.065 (iii)
TIME TO PEAK (hrs)=	6.00	6.08	6.00
RUNOFF VOLUME (mm)=	62.75	32.84	48.38
TOTAL RAINFALL (mm)=	63.75	63.75	63.75
RUNOFF COEFFICIENT =	0.98	0.52	0.76

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 82.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

RESERVOIR(0045) IN= 2---> OUT= 1 DT= 5.0 min	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
	0.0000	0.0000	0.0090	0.0260

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0051)	0.540	0.065	6.00	48.38
OUTFLOW: ID= 1 (0045)	0.540	0.006	7.17	47.03

PEAK FLOW REDUCTION [Qout/Qin](%)= 9.20
TIME SHIFT OF PEAK FLOW (min)= 70.00
MAXIMUM STORAGE USED (ha.m.)= 0.0173

READ STORM Ptotal= 63.75 mm	Filename: C:\Users\ygollamudi\AppData\Local\Temp\e88bcada-d938-48ee-986c-873dd4f72d8d\a8794606 Comments: 10yr

TIME (hrs)	RAIN (mm/hr)	TIME (hrs)	RAIN (mm/hr)	TIME (hrs)	RAIN (mm/hr)	TIME (hrs)	RAIN (mm/hr)
0.25	1.02	3.25	3.05	6.25	11.18	9.25	2.03
0.50	2.03	3.50	2.03	6.50	11.18	9.50	2.03
0.75	1.02	3.75	3.05	6.75	5.08	9.75	2.03
1.00	1.02	4.00	2.03	7.00	5.08	10.00	2.03
1.25	1.02	4.25	5.08	7.25	4.06	10.25	1.02
1.50	2.03	4.50	4.06	7.50	4.06	10.50	1.02
1.75	1.02	4.75	4.06	7.75	4.06	10.75	2.03
2.00	1.02	5.00	5.08	8.00	3.05	11.00	1.02
2.25	3.05	5.25	7.11	8.25	3.05	11.25	1.02
2.50	2.03	5.50	8.13	8.50	2.03	11.50	1.02
2.75	3.05	5.75	56.90	8.75	3.05	11.75	2.03
3.00	2.03	6.00	57.91	9.00	2.03	12.00	1.02

CALIB STANDHYD (0046) ID= 1 DT= 5.0 min	Area (ha)= 3.47 Total Imp(%)= 60.00 Dir. Conn.(%)= 60.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	2.08	1.39
Dep. Storage	(mm)=	1.00	1.50
Average Slope	(%)=	1.00	2.00
Length	(m)=	152.10	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME (hrs)	RAIN (mm/hr)	TIME (hrs)	RAIN (mm/hr)	TIME (hrs)	RAIN (mm/hr)	TIME (hrs)	RAIN (mm/hr)
0.083	1.02	3.083	3.05	6.083	11.18	9.08	2.03
0.167	1.02	3.167	3.05	6.167	11.18	9.17	2.03
0.250	1.02	3.250	3.05	6.250	11.18	9.25	2.03
0.333	2.03	3.333	2.03	6.333	11.18	9.33	2.03
0.417	2.03	3.417	2.03	6.417	11.18	9.42	2.03
0.500	2.03	3.500	2.03	6.500	11.18	9.50	2.03
0.583	1.02	3.583	3.05	6.583	5.08	9.58	2.03
0.667	1.02	3.667	3.05	6.667	5.08	9.67	2.03
0.750	1.02	3.750	3.05	6.750	5.08	9.75	2.03
0.833	1.02	3.833	2.03	6.833	5.08	9.83	2.03
0.917	1.02	3.917	2.03	6.917	5.08	9.92	2.03
1.000	1.02	4.000	2.03	7.000	5.08	10.00	2.03
1.083	1.02	4.083	5.08	7.083	4.06	10.08	1.02
1.167	1.02	4.167	5.08	7.167	4.06	10.17	1.02
1.250	1.02	4.250	5.08	7.250	4.06	10.25	1.02
1.333	2.03	4.333	4.06	7.333	4.06	10.33	1.02
1.417	2.03	4.417	4.06	7.417	4.06	10.42	1.02
1.500	2.03	4.500	4.06	7.500	4.06	10.50	1.02
1.583	1.02	4.583	4.06	7.583	4.06	10.58	2.03
1.667	1.02	4.667	4.06	7.667	4.06	10.67	2.03
1.750	1.02	4.750	4.06	7.750	4.06	10.75	2.03
1.833	1.02	4.833	5.08	7.833	3.05	10.83	1.02
1.917	1.02	4.917	5.08	7.917	3.05	10.92	1.02
2.000	1.02	5.000	5.08	8.000	3.05	11.00	1.02
2.083	3.05	5.083	7.11	8.083	3.05	11.08	1.02
2.167	3.05	5.167	7.11	8.167	3.05	11.17	1.02

2.250	3.05	5.250	7.11	8.250	3.05	11.25	1.02
2.333	2.03	5.333	8.13	8.333	2.03	11.33	1.02
2.417	2.03	5.417	8.13	8.417	2.03	11.42	1.02
2.500	2.03	5.500	8.13	8.500	2.03	11.50	1.02
2.583	3.05	5.583	56.90	8.583	3.05	11.58	2.03
2.667	3.05	5.667	56.90	8.667	3.05	11.67	2.03
2.750	3.05	5.750	56.90	8.750	3.05	11.75	2.03
2.833	2.03	5.833	57.91	8.833	2.03	11.83	1.02
2.917	2.03	5.917	57.91	8.917	2.03	11.92	1.02
3.000	2.03	6.000	57.91	9.000	2.03	12.00	1.02

Max.Eff.Inten.(mm/hr)=	57.91	36.38	
over (min)	5.00	15.00	
Storage Coeff. (min)=	4.09 (ii)	14.66 (ii)	
Unit Hyd. Tpeak (min)=	5.00	15.00	
Unit Hyd. peak (cms)=	0.24	0.08	
			TOTALS
PEAK FLOW (cms)=	0.33	0.11	0.436 (iii)
TIME TO PEAK (hrs)=	6.00	6.08	6.00
RUNOFF VOLUME (mm)=	62.75	32.84	50.79
TOTAL RAINFALL (mm)=	63.75	63.75	63.75
RUNOFF COEFFICIENT =	0.98	0.52	0.80

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 82.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

RESERVOIR(0047)				
IN= 2---> OUT= 1				
DT= 5.0 min	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
	0.0000	0.0000	0.0670	0.1700

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0046)	3.470	0.436	6.00	50.79
OUTFLOW: ID= 1 (0047)	3.470	0.045	7.08	50.60

PEAK FLOW REDUCTION [Qout/Qin](%)= 10.31
TIME SHIFT OF PEAK FLOW (min)= 65.00
MAXIMUM STORAGE USED (ha.m.)= 0.1141

READ STORM	Filename: C:\Users\ygollamudi\AppData\Local\Temp\e88bcada-d938-48ee-986c-873dd4f72d8d\a8794606
Ptotal= 63.75 mm	Comments: 10yr

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	1.02	3.25	3.05	6.25	11.18	9.25	2.03
0.50	2.03	3.50	2.03	6.50	11.18	9.50	2.03
0.75	1.02	3.75	3.05	6.75	5.08	9.75	2.03
1.00	1.02	4.00	2.03	7.00	5.08	10.00	2.03
1.25	1.02	4.25	5.08	7.25	4.06	10.25	1.02
1.50	2.03	4.50	4.06	7.50	4.06	10.50	1.02
1.75	1.02	4.75	4.06	7.75	4.06	10.75	2.03
2.00	1.02	5.00	5.08	8.00	3.05	11.00	1.02
2.25	3.05	5.25	7.11	8.25	3.05	11.25	1.02
2.50	2.03	5.50	8.13	8.50	2.03	11.50	1.02
2.75	3.05	5.75	56.90	8.75	3.05	11.75	2.03
3.00	2.03	6.00	57.91	9.00	2.03	12.00	1.02

CALIB / STANDHYD (0041) / ID= 1 DT= 5.0 min	Area (ha)= 1.62	Total Imp(%)= 46.00	Dir. Conn.(%)= 46.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.75	0.87
Dep. Storage	(mm)=	1.00	1.50
Average Slope	(%)=	1.00	2.00
Length	(m)=	103.92	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.02	3.083	3.05	6.083	11.18	9.08	2.03
0.167	1.02	3.167	3.05	6.167	11.18	9.17	2.03
0.250	1.02	3.250	3.05	6.250	11.18	9.25	2.03
0.333	2.03	3.333	2.03	6.333	11.18	9.33	2.03
0.417	2.03	3.417	2.03	6.417	11.18	9.42	2.03
0.500	2.03	3.500	2.03	6.500	11.18	9.50	2.03
0.583	1.02	3.583	3.05	6.583	5.08	9.58	2.03
0.667	1.02	3.667	3.05	6.667	5.08	9.67	2.03
0.750	1.02	3.750	3.05	6.750	5.08	9.75	2.03
0.833	1.02	3.833	2.03	6.833	5.08	9.83	2.03
0.917	1.02	3.917	2.03	6.917	5.08	9.92	2.03
1.000	1.02	4.000	2.03	7.000	5.08	10.00	2.03
1.083	1.02	4.083	5.08	7.083	4.06	10.08	1.02
1.167	1.02	4.167	5.08	7.167	4.06	10.17	1.02
1.250	1.02	4.250	5.08	7.250	4.06	10.25	1.02
1.333	2.03	4.333	4.06	7.333	4.06	10.33	1.02
1.417	2.03	4.417	4.06	7.417	4.06	10.42	1.02
1.500	2.03	4.500	4.06	7.500	4.06	10.50	1.02
1.583	1.02	4.583	4.06	7.583	4.06	10.58	2.03
1.667	1.02	4.667	4.06	7.667	4.06	10.67	2.03
1.750	1.02	4.750	4.06	7.750	4.06	10.75	2.03
1.833	1.02	4.833	5.08	7.833	3.05	10.83	1.02
1.917	1.02	4.917	5.08	7.917	3.05	10.92	1.02
2.000	1.02	5.000	5.08	8.000	3.05	11.00	1.02
2.083	3.05	5.083	7.11	8.083	3.05	11.08	1.02
2.167	3.05	5.167	7.11	8.167	3.05	11.17	1.02
2.250	3.05	5.250	7.11	8.250	3.05	11.25	1.02
2.333	2.03	5.333	8.13	8.333	2.03	11.33	1.02
2.417	2.03	5.417	8.13	8.417	2.03	11.42	1.02
2.500	2.03	5.500	8.13	8.500	2.03	11.50	1.02
2.583	3.05	5.583	56.90	8.583	3.05	11.58	2.03

2.667	3.05	5.667	56.90	8.667	3.05	11.67	2.03
2.750	3.05	5.750	56.90	8.750	3.05	11.75	2.03
2.833	2.03	5.833	57.91	8.833	2.03	11.83	1.02
2.917	2.03	5.917	57.91	8.917	2.03	11.92	1.02
3.000	2.03	6.000	57.91	9.000	2.03	12.00	1.02

			TOTALS
Max.Eff.Inten.(mm/hr)=	57.91	42.28	
over (min)	5.00	15.00	
Storage Coeff. (min)=	3.25 (ii)	13.21 (ii)	
Unit Hyd. Tpeak (min)=	5.00	15.00	
Unit Hyd. peak (cms)=	0.27	0.08	
PEAK FLOW (cms)=	0.12	0.08	0.197 (iii)
TIME TO PEAK (hrs)=	6.00	6.08	6.00
RUNOFF VOLUME (mm)=	62.75	37.41	49.06
TOTAL RAINFALL (mm)=	63.75	63.75	63.75
RUNOFF COEFFICIENT =	0.98	0.59	0.77

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 86.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

RESERVOIR(0048)				
IN= 2---> OUT= 1				
DT= 5.0 min	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
	0.0000	0.0000	0.0570	0.0650

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0041)	1.620	0.197	6.00	49.06
OUTFLOW: ID= 1 (0048)	1.620	0.038	6.67	48.89

PEAK FLOW REDUCTION [Qout/Qin](%)= 19.08
TIME SHIFT OF PEAK FLOW (min)= 40.00
MAXIMUM STORAGE USED (ha.m.)= 0.0428

READ STORM	Filename: C:\Users\ygollamudi\AppData\Local\Temp\e88bcada-d938-48ee-986c-873dd4f72d8d\a8794606
Ptotal= 63.75 mm	Comments: 10yr

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	1.02	3.25	3.05	6.25	11.18	9.25	2.03
0.50	2.03	3.50	2.03	6.50	11.18	9.50	2.03
0.75	1.02	3.75	3.05	6.75	5.08	9.75	2.03
1.00	1.02	4.00	2.03	7.00	5.08	10.00	2.03
1.25	1.02	4.25	5.08	7.25	4.06	10.25	1.02
1.50	2.03	4.50	4.06	7.50	4.06	10.50	1.02
1.75	1.02	4.75	4.06	7.75	4.06	10.75	2.03
2.00	1.02	5.00	5.08	8.00	3.05	11.00	1.02
2.25	3.05	5.25	7.11	8.25	3.05	11.25	1.02
2.50	2.03	5.50	8.13	8.50	2.03	11.50	1.02
2.75	3.05	5.75	56.90	8.75	3.05	11.75	2.03
3.00	2.03	6.00	57.91	9.00	2.03	12.00	1.02

CALIB			
STANDHYD (0049)	Area (ha)= 1.63		
ID= 1 DT= 5.0 min	Total Imp(%)= 40.00	Dir. Conn.(%)= 40.00	

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.65	0.98
Dep. Storage	(mm)=	1.00	1.50
Average Slope	(%)=	1.00	2.00
Length	(m)=	104.24	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.02	3.083	3.05	6.083	11.18	9.08	2.03
0.167	1.02	3.167	3.05	6.167	11.18	9.17	2.03
0.250	1.02	3.250	3.05	6.250	11.18	9.25	2.03
0.333	2.03	3.333	2.03	6.333	11.18	9.33	2.03
0.417	2.03	3.417	2.03	6.417	11.18	9.42	2.03
0.500	2.03	3.500	2.03	6.500	11.18	9.50	2.03
0.583	1.02	3.583	3.05	6.583	5.08	9.58	2.03
0.667	1.02	3.667	3.05	6.667	5.08	9.67	2.03
0.750	1.02	3.750	3.05	6.750	5.08	9.75	2.03
0.833	1.02	3.833	2.03	6.833	5.08	9.83	2.03
0.917	1.02	3.917	2.03	6.917	5.08	9.92	2.03
1.000	1.02	4.000	2.03	7.000	5.08	10.00	2.03
1.083	1.02	4.083	5.08	7.083	4.06	10.08	1.02
1.167	1.02	4.167	5.08	7.167	4.06	10.17	1.02
1.250	1.02	4.250	5.08	7.250	4.06	10.25	1.02
1.333	2.03	4.333	4.06	7.333	4.06	10.33	1.02
1.417	2.03	4.417	4.06	7.417	4.06	10.42	1.02
1.500	2.03	4.500	4.06	7.500	4.06	10.50	1.02
1.583	1.02	4.583	4.06	7.583	4.06	10.58	2.03
1.667	1.02	4.667	4.06	7.667	4.06	10.67	2.03
1.750	1.02	4.750	4.06	7.750	4.06	10.75	2.03
1.833	1.02	4.833	5.08	7.833	3.05	10.83	1.02
1.917	1.02	4.917	5.08	7.917	3.05	10.92	1.02
2.000	1.02	5.000	5.08	8.000	3.05	11.00	1.02
2.083	3.05	5.083	7.11	8.083	3.05	11.08	1.02
2.167	3.05	5.167	7.11	8.167	3.05	11.17	1.02
2.250	3.05	5.250	7.11	8.250	3.05	11.25	1.02
2.333	2.03	5.333	8.13	8.333	2.03	11.33	1.02
2.417	2.03	5.417	8.13	8.417	2.03	11.42	1.02
2.500	2.03	5.500	8.13	8.500	2.03	11.50	1.02
2.583	3.05	5.583	56.90	8.583	3.05	11.58	2.03
2.667	3.05	5.667	56.90	8.667	3.05	11.67	2.03
2.750	3.05	5.750	56.90	8.750	3.05	11.75	2.03
2.833	2.03	5.833	57.91	8.833	2.03	11.83	1.02
2.917	2.03	5.917	57.91	8.917	2.03	11.92	1.02
3.000	2.03	6.000	57.91	9.000	2.03	12.00	1.02

```
     Max.Eff.Inten.(mm/hr)=      57.91        36.38
               over (min)        5.00        15.00
     Storage Coeff.  (min)=       3.26 (ii)   13.84 (ii)
     Unit Hyd. Tpeak (min)=       5.00        15.00
     Unit Hyd. peak  (cms)=       0.27         0.08
                                                        *TOTALS*
     PEAK FLOW       (cms)=       0.10         0.08          0.178 (iii)
     TIME TO PEAK    (hrs)=       6.00         6.08           6.00
     RUNOFF VOLUME    (mm)=      62.75        32.84          44.80
     TOTAL RAINFALL   (mm)=      63.75        63.75          63.75
     RUNOFF COEFFICIENT   =       0.98         0.52           0.70

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  82.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------
--------------------
| RESERVOIR(  0050)|
| IN= 2---> OUT= 1 |
| DT=  5.0 min     |     OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
--------------------      (cms)     (ha.m.)   |   (cms)     (ha.m.)
                          0.0000     0.0000   |   0.0300     0.0710

                               AREA     QPEAK     TPEAK       R.V.
                               (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  0049)     1.630     0.178      6.00      44.80
   OUTFLOW: ID= 1 (  0050)     1.630     0.020      7.08      44.44

                  PEAK   FLOW   REDUCTION [Qout/Qin](%)= 10.96
                  TIME SHIFT OF PEAK FLOW         (min)= 65.00
                  MAXIMUM  STORAGE   USED       (ha.m.)=  0.0462

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================================================================================
========================

       V    V   I    SSSSS  U   U    A    L
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

        OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
       O   O    T      T    H   H   Y Y   MM MM  O   O
       O   O    T      T    H   H    Y    M   M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
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                  *****  D E T A I L E D   O U T P U T *****

  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 5.0\VO2\voin.dat
  Output  filename: C:\Users\ygollamudi\AppData\Local\Civica\VH5\10c26041-43a5-
4194-90ea-ce2e7e4124a0\2c4b8e54-ca0d-4a29-afb4-8f3ba58c8f97\s
  Summary filename: C:\Users\ygollamudi\AppData\Local\Civica\VH5\10c26041-43a5-
4194-90ea-ce2e7e4124a0\2c4b8e54-ca0d-4a29-afb4-8f3ba58c8f97\s

DATE: 08-28-2019                          TIME: 04:19:44

USER:


COMMENTS: _____

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  ***********************************************
  ** SIMULATION : Run 04                       **
  ***********************************************


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|    READ STORM    |    Filename: C:\Users\ygollamudi\AppD
|                  |              ata\Local\Temp\
|                  |              e88bcada-d938-48ee-986c-873dd4f72d8d\ed829e8d
| Ptotal= 74.42 mm |    Comments: 25yr
--------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.25    1.02 |  3.25    3.05 |  6.25   13.21 |  9.25    3.05
                0.50    2.03 |  3.50    3.05 |  6.50   13.21 |  9.50    2.03
                0.75    1.02 |  3.75    3.05 |  6.75    6.10 |  9.75    2.03
                1.00    2.03 |  4.00    3.05 |  7.00    6.10 | 10.00    2.03
                1.25    1.02 |  4.25    5.08 |  7.25    5.08 | 10.25    2.03
                1.50    2.03 |  4.50    5.08 |  7.50    4.06 | 10.50    1.02
                1.75    1.02 |  4.75    6.10 |  7.75    4.06 | 10.75    2.03
                2.00    2.03 |  5.00    5.08 |  8.00    5.08 | 11.00    1.02
                2.25    3.05 |  5.25    8.13 |  8.25    3.05 | 11.25    2.03
                2.50    3.05 |  5.50    9.14 |  8.50    3.05 | 11.50    1.02
                2.75    3.05 |  5.75   67.06 |  8.75    3.05 | 11.75    2.03
                3.00    2.03 |  6.00   67.06 |  9.00    2.03 | 12.00    1.02

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--------------------
| CALIB            |
| STANDHYD (  0040)|   Area    (ha)=   0.61
|ID= 1 DT= 5.0 min |   Total Imp(%)=  48.00   Dir. Conn.(%)=  48.00
--------------------
                                 IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.29          0.32
     Dep. Storage     (mm)=       1.00          1.50
     Average Slope     (%)=       1.00          2.00
     Length            (m)=      63.77         40.00
     Mannings n           =      0.013         0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.

                                  ---- TRANSFORMED HYETOGRAPH ----
```

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.02	3.083	3.05	6.083	13.21	9.08	3.05
0.167	1.02	3.167	3.05	6.167	13.21	9.17	3.05
0.250	1.02	3.250	3.05	6.250	13.21	9.25	3.05
0.333	2.03	3.333	3.05	6.333	13.21	9.33	2.03
0.417	2.03	3.417	3.05	6.417	13.21	9.42	2.03
0.500	2.03	3.500	3.05	6.500	13.21	9.50	2.03
0.583	1.02	3.583	3.05	6.583	6.10	9.58	2.03
0.667	1.02	3.667	3.05	6.667	6.10	9.67	2.03
0.750	1.02	3.750	3.05	6.750	6.10	9.75	2.03
0.833	2.03	3.833	3.05	6.833	6.10	9.83	2.03
0.917	2.03	3.917	3.05	6.917	6.10	9.92	2.03
1.000	2.03	4.000	3.05	7.000	6.10	10.00	2.03
1.083	1.02	4.083	5.08	7.083	5.08	10.08	2.03
1.167	1.02	4.167	5.08	7.167	5.08	10.17	2.03
1.250	1.02	4.250	5.08	7.250	5.08	10.25	2.03
1.333	2.03	4.333	5.08	7.333	4.06	10.33	1.02
1.417	2.03	4.417	5.08	7.417	4.06	10.42	1.02
1.500	2.03	4.500	5.08	7.500	4.06	10.50	1.02
1.583	1.02	4.583	6.10	7.583	4.06	10.58	2.03
1.667	1.02	4.667	6.10	7.667	4.06	10.67	2.03
1.750	1.02	4.750	6.10	7.750	4.06	10.75	2.03
1.833	2.03	4.833	5.08	7.833	5.08	10.83	1.02
1.917	2.03	4.917	5.08	7.917	5.08	10.92	1.02
2.000	2.03	5.000	5.08	8.000	5.08	11.00	1.02
2.083	3.05	5.083	8.13	8.083	3.05	11.08	2.03
2.167	3.05	5.167	8.13	8.167	3.05	11.17	2.03
2.250	3.05	5.250	8.13	8.250	3.05	11.25	2.03
2.333	3.05	5.333	9.14	8.333	3.05	11.33	1.02
2.417	3.05	5.417	9.14	8.417	3.05	11.42	1.02
2.500	3.05	5.500	9.14	8.500	3.05	11.50	1.02
2.583	3.05	5.583	67.06	8.583	3.05	11.58	2.03
2.667	3.05	5.667	67.06	8.667	3.05	11.67	2.03
2.750	3.05	5.750	67.06	8.750	3.05	11.75	2.03
2.833	2.03	5.833	67.06	8.833	2.03	11.83	1.02
2.917	2.03	5.917	67.06	8.917	2.03	11.92	1.02
3.000	2.03	6.000	67.05	9.000	2.03	12.00	1.02

Max.Eff.Inten.(mm/hr)=	67.06	46.45	
over (min)	5.00	15.00	
Storage Coeff. (min)=	2.29 (ii)	11.88 (ii)	
Unit Hyd. Tpeak (min)=	5.00	15.00	
Unit Hyd. peak (cms)=	0.30	0.09	
			TOTALS
PEAK FLOW (cms)=	0.05	0.03	0.086 (iii)
TIME TO PEAK (hrs)=	5.92	6.08	6.00
RUNOFF VOLUME (mm)=	73.42	41.32	56.72
TOTAL RAINFALL (mm)=	74.42	74.42	74.42
RUNOFF COEFFICIENT =	0.99	0.56	0.76

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 82.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

RESERVOIR(0043)| IN= 2---> OUT= 1	DT= 5.0 min	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
	0.0000	0.0000	0.0100	0.0295

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0040)	0.610	0.086	6.00	56.72
OUTFLOW: ID= 1 (0043)	0.610	0.008	7.25	55.50

PEAK FLOW REDUCTION [Qout/Qin](%)= 9.07
TIME SHIFT OF PEAK FLOW (min)= 75.00
MAXIMUM STORAGE USED (ha.m.)= 0.0230

READ STORM	Filename: C:\Users\ygollamudi\AppData\Local\Temp\e88bcada-d938-48ee-986c-873dd4f72d8d\ed829e8d
Ptotal= 74.42 mm	Comments: 25yr

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	1.02	3.25	3.05	6.25	13.21	9.25	3.05
0.50	2.03	3.50	3.05	6.50	13.21	9.50	2.03
0.75	1.02	3.75	3.05	6.75	6.10	9.75	2.03
1.00	2.03	4.00	3.05	7.00	6.10	10.00	2.03
1.25	1.02	4.25	5.08	7.25	5.08	10.25	2.03
1.50	2.03	4.50	5.08	7.50	4.06	10.50	1.02
1.75	1.02	4.75	6.10	7.75	4.06	10.75	2.03
2.00	2.03	5.00	5.08	8.00	5.08	11.00	1.02
2.25	3.05	5.25	8.13	8.25	3.05	11.25	2.03
2.50	3.05	5.50	9.14	8.50	3.05	11.50	1.02
2.75	3.05	5.75	67.06	8.75	3.05	11.75	2.03
3.00	2.03	6.00	67.06	9.00	2.03	12.00	1.02

CALIB	STANDHYD (0042)| ID= 1 DT= 5.0 min	Area (ha)= 1.14	Total Imp(%)= 49.00	Dir. Conn.(%)= 49.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.56	0.58
Dep. Storage	(mm)=	1.00	1.50
Average Slope	(%)=	1.00	2.00
Length	(m)=	87.18	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.02	3.083	3.05	6.083	13.21	9.08	3.05
0.167	1.02	3.167	3.05	6.167	13.21	9.17	3.05
0.250	1.02	3.250	3.05	6.250	13.21	9.25	3.05

0.333	2.03	3.333	3.05	6.333	13.21	9.33	2.03
0.417	2.03	3.417	3.05	6.417	13.21	9.42	2.03
0.500	2.03	3.500	3.05	6.500	13.21	9.50	2.03
0.583	1.02	3.583	3.05	6.583	6.10	9.58	2.03
0.667	1.02	3.667	3.05	6.667	6.10	9.67	2.03
0.750	1.02	3.750	3.05	6.750	6.10	9.75	2.03
0.833	2.03	3.833	3.05	6.833	6.10	9.83	2.03
0.917	2.03	3.917	3.05	6.917	6.10	9.92	2.03
1.000	2.03	4.000	3.05	7.000	6.10	10.00	2.03
1.083	1.02	4.083	5.08	7.083	5.08	10.08	2.03
1.167	1.02	4.167	5.08	7.167	5.08	10.17	2.03
1.250	1.02	4.250	5.08	7.250	5.08	10.25	2.03
1.333	2.03	4.333	5.08	7.333	4.06	10.33	1.02
1.417	2.03	4.417	5.08	7.417	4.06	10.42	1.02
1.500	2.03	4.500	5.08	7.500	4.06	10.50	1.02
1.583	1.02	4.583	6.10	7.583	4.06	10.58	2.03
1.667	1.02	4.667	6.10	7.667	4.06	10.67	2.03
1.750	1.02	4.750	6.10	7.750	4.06	10.75	2.03
1.833	2.03	4.833	5.08	7.833	5.08	10.83	1.02
1.917	2.03	4.917	5.08	7.917	5.08	10.92	1.02
2.000	2.03	5.000	5.08	8.000	5.08	11.00	1.02
2.083	3.05	5.083	8.13	8.083	3.05	11.08	2.03
2.167	3.05	5.167	8.13	8.167	3.05	11.17	2.03
2.250	3.05	5.250	8.13	8.250	3.05	11.25	2.03
2.333	3.05	5.333	9.14	8.333	3.05	11.33	1.02
2.417	3.05	5.417	9.14	8.417	3.05	11.42	1.02
2.500	3.05	5.500	9.14	8.500	3.05	11.50	1.02
2.583	3.05	5.583	67.06	8.583	3.05	11.58	2.03
2.667	3.05	5.667	67.06	8.667	3.05	11.67	2.03
2.750	3.05	5.750	67.06	8.750	3.05	11.75	2.03
2.833	2.03	5.833	67.06	8.833	2.03	11.83	1.02
2.917	2.03	5.917	67.06	8.917	2.03	11.92	1.02
3.000	2.03	6.000	67.05	9.000	2.03	12.00	1.02

Max.Eff.Inten.(mm/hr)=	67.06	46.45	
over (min)	5.00	15.00	
Storage Coeff. (min)=	2.76 (ii)	12.35 (ii)	
Unit Hyd. Tpeak (min)=	5.00	15.00	
Unit Hyd. peak (cms)=	0.28	0.08	
			TOTALS
PEAK FLOW (cms)=	0.10	0.06	0.161 (iii)
TIME TO PEAK (hrs)=	6.00	6.08	6.00
RUNOFF VOLUME (mm)=	73.42	41.32	57.05
TOTAL RAINFALL (mm)=	74.42	74.42	74.42
RUNOFF COEFFICIENT =	0.99	0.56	0.77

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 82.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

RESERVOIR(0044) IN= 2---> OUT= 1 DT= 5.0 min	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
	0.0000	0.0000	0.0160	0.0570

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0042)	1.140	0.161	6.00	57.05
OUTFLOW: ID= 1 (0044)	1.140	0.013	7.50	56.25

PEAK FLOW REDUCTION [Qout/Qin](%)= 7.80
TIME SHIFT OF PEAK FLOW (min)= 90.00
MAXIMUM STORAGE USED (ha.m.)= 0.0448

READ STORM Ptotal= 74.42 mm	Filename: C:\Users\ygollamudi\AppData\Local\Temp\e88bcada-d938-48ee-986c-873dd4f72d8d\ed829e8d Comments: 25yr

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	1.02	3.25	3.05	6.25	13.21	9.25	3.05
0.50	2.03	3.50	3.05	6.50	13.21	9.50	2.03
0.75	1.02	3.75	3.05	6.75	6.10	9.75	2.03
1.00	2.03	4.00	3.05	7.00	6.10	10.00	2.03
1.25	1.02	4.25	5.08	7.25	5.08	10.25	2.03
1.50	2.03	4.50	5.08	7.50	4.06	10.50	1.02
1.75	1.02	4.75	6.10	7.75	4.06	10.75	2.03
2.00	2.03	5.00	5.08	8.00	5.08	11.00	1.02
2.25	3.05	5.25	8.13	8.25	3.05	11.25	2.03
2.50	3.05	5.50	9.14	8.50	3.05	11.50	1.02
2.75	3.05	5.75	67.06	8.75	3.05	11.75	2.03
3.00	2.03	6.00	67.06	9.00	2.03	12.00	1.02

CALIB STANDHYD (0051) ID= 1 DT= 5.0 min	Area (ha)= 0.54 Total Imp(%)= 52.00 Dir. Conn.(%)= 52.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.28	0.26
Dep. Storage	(mm)=	1.00	1.50
Average Slope	(%)=	1.00	2.00
Length	(m)=	60.00	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.02	3.083	3.05	6.083	13.21	9.08	3.05
0.167	1.02	3.167	3.05	6.167	13.21	9.17	3.05
0.250	1.02	3.250	3.05	6.250	13.21	9.25	3.05
0.333	2.03	3.333	3.05	6.333	13.21	9.33	2.03
0.417	2.03	3.417	3.05	6.417	13.21	9.42	2.03
0.500	2.03	3.500	3.05	6.500	13.21	9.50	2.03
0.583	1.02	3.583	3.05	6.583	6.10	9.58	2.03
0.667	1.02	3.667	3.05	6.667	6.10	9.67	2.03

0.750	1.02	3.750	3.05	6.750	6.10	9.75	2.03
0.833	2.03	3.833	3.05	6.833	6.10	9.83	2.03
0.917	2.03	3.917	3.05	6.917	6.10	9.92	2.03
1.000	2.03	4.000	3.05	7.000	6.10	10.00	2.03
1.083	1.02	4.083	5.08	7.083	5.08	10.08	2.03
1.167	1.02	4.167	5.08	7.167	5.08	10.17	2.03
1.250	1.02	4.250	5.08	7.250	5.08	10.25	2.03
1.333	2.03	4.333	5.08	7.333	4.06	10.33	1.02
1.417	2.03	4.417	5.08	7.417	4.06	10.42	1.02
1.500	2.03	4.500	5.08	7.500	4.06	10.50	1.02
1.583	1.02	4.583	6.10	7.583	4.06	10.58	2.03
1.667	1.02	4.667	6.10	7.667	4.06	10.67	2.03
1.750	1.02	4.750	6.10	7.750	4.06	10.75	2.03
1.833	2.03	4.833	5.08	7.833	5.08	10.83	1.02
1.917	2.03	4.917	5.08	7.917	5.08	10.92	1.02
2.000	2.03	5.000	5.08	8.000	5.08	11.00	1.02
2.083	3.05	5.083	8.13	8.083	3.05	11.08	2.03
2.167	3.05	5.167	8.13	8.167	3.05	11.17	2.03
2.250	3.05	5.250	8.13	8.250	3.05	11.25	2.03
2.333	3.05	5.333	9.14	8.333	3.05	11.33	1.02
2.417	3.05	5.417	9.14	8.417	3.05	11.42	1.02
2.500	3.05	5.500	9.14	8.500	3.05	11.50	1.02
2.583	3.05	5.583	67.06	8.583	3.05	11.58	2.03
2.667	3.05	5.667	67.06	8.667	3.05	11.67	2.03
2.750	3.05	5.750	67.06	8.750	3.05	11.75	2.03
2.833	2.03	5.833	67.06	8.833	2.03	11.83	1.02
2.917	2.03	5.917	67.06	8.917	2.03	11.92	1.02
3.000	2.03	6.000	67.05	9.000	2.03	12.00	1.02

			TOTALS
Max.Eff.Inten.(mm/hr)=	67.06	46.45	
over (min)	5.00	15.00	
Storage Coeff. (min)=	2.21 (ii)	11.80 (ii)	
Unit Hyd. Tpeak (min)=	5.00	15.00	
Unit Hyd. peak (cms)=	0.30	0.09	
PEAK FLOW (cms)=	0.05	0.03	0.078 (iii)
TIME TO PEAK (hrs)=	5.92	6.08	6.00
RUNOFF VOLUME (mm)=	73.42	41.32	58.00
TOTAL RAINFALL (mm)=	74.42	74.42	74.42
RUNOFF COEFFICIENT =	0.99	0.56	0.78

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 82.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

RESERVOIR(0045)				
IN= 2---> OUT= 1				
DT= 5.0 min	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
	0.0000	0.0000	0.0090	0.0260

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0051)	0.540	0.078	6.00	58.00
OUTFLOW: ID= 1 (0045)	0.540	0.007	7.25	56.64

PEAK FLOW REDUCTION [Qout/Qin](%)= 9.21
TIME SHIFT OF PEAK FLOW (min)= 75.00
MAXIMUM STORAGE USED (ha.m.)= 0.0208

READ STORM	Filename: C:\Users\ygollamudi\AppData\Local\Temp\e88bcada-d938-48ee-986c-873dd4f72d8d\ed829e8d
Ptotal= 74.42 mm	Comments: 25yr

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	1.02	3.25	3.05	6.25	13.21	9.25	3.05
0.50	2.03	3.50	3.05	6.50	13.21	9.50	2.03
0.75	1.02	3.75	3.05	6.75	6.10	9.75	2.03
1.00	2.03	4.00	3.05	7.00	6.10	10.00	2.03
1.25	1.02	4.25	5.08	7.25	5.08	10.25	2.03
1.50	2.03	4.50	5.08	7.50	4.06	10.50	1.02
1.75	1.02	4.75	6.10	7.75	4.06	10.75	2.03
2.00	2.03	5.00	5.08	8.00	5.08	11.00	1.02
2.25	3.05	5.25	8.13	8.25	3.05	11.25	2.03
2.50	3.05	5.50	9.14	8.50	3.05	11.50	1.02
2.75	3.05	5.75	67.06	8.75	3.05	11.75	2.03
3.00	2.03	6.00	67.06	9.00	2.03	12.00	1.02

CALIB	
STANDHYD (0046)	Area (ha)= 3.47
ID= 1 DT= 5.0 min	Total Imp(%)= 60.00 Dir. Conn.(%)= 60.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	2.08	1.39
Dep. Storage	(mm)=	1.00	1.50
Average Slope	(%)=	1.00	2.00
Length	(m)=	152.10	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.02	3.083	3.05	6.083	13.21	9.08	3.05
0.167	1.02	3.167	3.05	6.167	13.21	9.17	3.05
0.250	1.02	3.250	3.05	6.250	13.21	9.25	3.05
0.333	2.03	3.333	3.05	6.333	13.21	9.33	2.03
0.417	2.03	3.417	3.05	6.417	13.21	9.42	2.03
0.500	2.03	3.500	3.05	6.500	13.21	9.50	2.03
0.583	1.02	3.583	3.05	6.583	6.10	9.58	2.03
0.667	1.02	3.667	3.05	6.667	6.10	9.67	2.03
0.750	1.02	3.750	3.05	6.750	6.10	9.75	2.03
0.833	2.03	3.833	3.05	6.833	6.10	9.83	2.03
0.917	2.03	3.917	3.05	6.917	6.10	9.92	2.03
1.000	2.03	4.000	3.05	7.000	6.10	10.00	2.03
1.083	1.02	4.083	5.08	7.083	5.08	10.08	2.03

1.167	1.02	4.167	5.08	7.167	5.08	10.17	2.03
1.250	1.02	4.250	5.08	7.250	5.08	10.25	2.03
1.333	2.03	4.333	5.08	7.333	4.06	10.33	1.02
1.417	2.03	4.417	5.08	7.417	4.06	10.42	1.02
1.500	2.03	4.500	5.08	7.500	4.06	10.50	1.02
1.583	1.02	4.583	6.10	7.583	4.06	10.58	2.03
1.667	1.02	4.667	6.10	7.667	4.06	10.67	2.03
1.750	1.02	4.750	6.10	7.750	4.06	10.75	2.03
1.833	2.03	4.833	5.08	7.833	5.08	10.83	1.02
1.917	2.03	4.917	5.08	7.917	5.08	10.92	1.02
2.000	2.03	5.000	5.08	8.000	5.08	11.00	1.02
2.083	3.05	5.083	8.13	8.083	3.05	11.08	2.03
2.167	3.05	5.167	8.13	8.167	3.05	11.17	2.03
2.250	3.05	5.250	8.13	8.250	3.05	11.25	2.03
2.333	3.05	5.333	9.14	8.333	3.05	11.33	1.02
2.417	3.05	5.417	9.14	8.417	3.05	11.42	1.02
2.500	3.05	5.500	9.14	8.500	3.05	11.50	1.02
2.583	3.05	5.583	67.06	8.583	3.05	11.58	2.03
2.667	3.05	5.667	67.06	8.667	3.05	11.67	2.03
2.750	3.05	5.750	67.06	8.750	3.05	11.75	2.03
2.833	2.03	5.833	67.06	8.833	2.03	11.83	1.02
2.917	2.03	5.917	67.06	8.917	2.03	11.92	1.02
3.000	2.03	6.000	67.05	9.000	2.03	12.00	1.02

Max.Eff.Inten.(mm/hr)=	67.06	46.45	
over (min)	5.00	15.00	
Storage Coeff. (min)=	3.86 (ii)	13.45 (ii)	
Unit Hyd. Tpeak (min)=	5.00	15.00	
Unit Hyd. peak (cms)=	0.25	0.08	
			TOTALS
PEAK FLOW (cms)=	0.39	0.14	0.520 (iii)
TIME TO PEAK (hrs)=	6.00	6.08	6.00
RUNOFF VOLUME (mm)=	73.42	41.32	60.58
TOTAL RAINFALL (mm)=	74.42	74.42	74.42
RUNOFF COEFFICIENT =	0.99	0.56	0.81

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 82.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

RESERVOIR(0047)				
IN= 2---> OUT= 1				
DT= 5.0 min	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
	0.0000	0.0000	0.0670	0.1700

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0046)	3.470	0.520	6.00	60.58
OUTFLOW: ID= 1 (0047)	3.470	0.054	7.08	60.40

PEAK FLOW REDUCTION [Qout/Qin](%)= 10.34
TIME SHIFT OF PEAK FLOW (min)= 65.00
MAXIMUM STORAGE USED (ha.m.)= 0.1365

READ STORM	Filename: C:\Users\ygollamudi\AppData\Local\Temp\e88bcada-d938-48ee-986c-873dd4f72d8d\ed829e8d
Ptotal= 74.42 mm	Comments: 25yr

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	1.02	3.25	3.05	6.25	13.21	9.25	3.05
0.50	2.03	3.50	3.05	6.50	13.21	9.50	2.03
0.75	1.02	3.75	3.05	6.75	6.10	9.75	2.03
1.00	2.03	4.00	3.05	7.00	6.10	10.00	2.03
1.25	1.02	4.25	5.08	7.25	5.08	10.25	2.03
1.50	2.03	4.50	5.08	7.50	4.06	10.50	1.02
1.75	1.02	4.75	6.10	7.75	4.06	10.75	2.03
2.00	2.03	5.00	5.08	8.00	5.08	11.00	1.02
2.25	3.05	5.25	8.13	8.25	3.05	11.25	2.03
2.50	3.05	5.50	9.14	8.50	3.05	11.50	1.02
2.75	3.05	5.75	67.06	8.75	3.05	11.75	2.03
3.00	2.03	6.00	67.06	9.00	2.03	12.00	1.02

CALIB			
STANDHYD (0041)	Area (ha)= 1.62		
ID= 1 DT= 5.0 min	Total Imp(%)= 46.00	Dir. Conn.(%)= 46.00	
		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.75	0.87
Dep. Storage	(mm)=	1.00	1.50
Average Slope	(%)=	1.00	2.00
Length	(m)=	103.92	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.02	3.083	3.05	6.083	13.21	9.08	3.05
0.167	1.02	3.167	3.05	6.167	13.21	9.17	3.05
0.250	1.02	3.250	3.05	6.250	13.21	9.25	3.05
0.333	2.03	3.333	3.05	6.333	13.21	9.33	2.03
0.417	2.03	3.417	3.05	6.417	13.21	9.42	2.03
0.500	2.03	3.500	3.05	6.500	13.21	9.50	2.03
0.583	1.02	3.583	3.05	6.583	6.10	9.58	2.03
0.667	1.02	3.667	3.05	6.667	6.10	9.67	2.03
0.750	1.02	3.750	3.05	6.750	6.10	9.75	2.03
0.833	2.03	3.833	3.05	6.833	6.10	9.83	2.03
0.917	2.03	3.917	3.05	6.917	6.10	9.92	2.03
1.000	2.03	4.000	3.05	7.000	6.10	10.00	2.03
1.083	1.02	4.083	5.08	7.083	5.08	10.08	2.03
1.167	1.02	4.167	5.08	7.167	5.08	10.17	2.03
1.250	1.02	4.250	5.08	7.250	5.08	10.25	2.03
1.333	2.03	4.333	5.08	7.333	4.06	10.33	1.02
1.417	2.03	4.417	5.08	7.417	4.06	10.42	1.02
1.500	2.03	4.500	5.08	7.500	4.06	10.50	1.02

1.583	1.02	4.583	6.10	7.583	4.06	10.58	2.03
1.667	1.02	4.667	6.10	7.667	4.06	10.67	2.03
1.750	1.02	4.750	6.10	7.750	4.06	10.75	2.03
1.833	2.03	4.833	5.08	7.833	5.08	10.83	1.02
1.917	2.03	4.917	5.08	7.917	5.08	10.92	1.02
2.000	2.03	5.000	5.08	8.000	5.08	11.00	1.02
2.083	3.05	5.083	8.13	8.083	3.05	11.08	2.03
2.167	3.05	5.167	8.13	8.167	3.05	11.17	2.03
2.250	3.05	5.250	8.13	8.250	3.05	11.25	2.03
2.333	3.05	5.333	9.14	8.333	3.05	11.33	1.02
2.417	3.05	5.417	9.14	8.417	3.05	11.42	1.02
2.500	3.05	5.500	9.14	8.500	3.05	11.50	1.02
2.583	3.05	5.583	67.06	8.583	3.05	11.58	2.03
2.667	3.05	5.667	67.06	8.667	3.05	11.67	2.03
2.750	3.05	5.750	67.06	8.750	3.05	11.75	2.03
2.833	2.03	5.833	67.06	8.833	2.03	11.83	1.02
2.917	2.03	5.917	67.06	8.917	2.03	11.92	1.02
3.000	2.03	6.000	67.05	9.000	2.03	12.00	1.02

			TOTALS
Max.Eff.Inten.(mm/hr)=	67.06	51.61	
over (min)	5.00	15.00	
Storage Coeff. (min)=	3.07 (ii)	12.26 (ii)	
Unit Hyd. Tpeak (min)=	5.00	15.00	
Unit Hyd. peak (cms)=	0.27	0.09	
PEAK FLOW (cms)=	0.14	0.10	0.237 (iii)
TIME TO PEAK (hrs)=	6.00	6.08	6.00
RUNOFF VOLUME (mm)=	73.42	46.54	58.90
TOTAL RAINFALL (mm)=	74.42	74.42	74.42
RUNOFF COEFFICIENT =	0.99	0.63	0.79

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 86.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

RESERVOIR(0048)				
IN= 2---> OUT= 1				
DT= 5.0 min	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
	0.0000	0.0000	0.0570	0.0650

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0041)	1.620	0.237	6.00	58.90
OUTFLOW: ID= 1 (0048)	1.620	0.045	6.58	58.73

PEAK FLOW REDUCTION [Qout/Qin](%)= 19.11
TIME SHIFT OF PEAK FLOW (min)= 35.00
MAXIMUM STORAGE USED (ha.m.)= 0.0517

READ STORM	Filename: C:\Users\ygollamudi\AppData\Local\Temp\	e88bcada-d938-48ee-986c-873dd4f72d8d\ed829e8d

Ptotal= 74.42 mm	Comments: 25yr

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	1.02	3.25	3.05	6.25	13.21	9.25	3.05
0.50	2.03	3.50	3.05	6.50	13.21	9.50	2.03
0.75	1.02	3.75	3.05	6.75	6.10	9.75	2.03
1.00	2.03	4.00	3.05	7.00	6.10	10.00	2.03
1.25	1.02	4.25	5.08	7.25	5.08	10.25	2.03
1.50	2.03	4.50	5.08	7.50	4.06	10.50	1.02
1.75	1.02	4.75	6.10	7.75	4.06	10.75	2.03
2.00	2.03	5.00	5.08	8.00	5.08	11.00	1.02
2.25	3.05	5.25	8.13	8.25	3.05	11.25	2.03
2.50	3.05	5.50	9.14	8.50	3.05	11.50	1.02
2.75	3.05	5.75	67.06	8.75	3.05	11.75	2.03
3.00	2.03	6.00	67.06	9.00	2.03	12.00	1.02

CALIB	
STANDHYD (0049)	Area (ha)= 1.63
ID= 1 DT= 5.0 min	Total Imp(%)= 40.00 Dir. Conn.(%)= 40.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.65	0.98
Dep. Storage	(mm)=	1.00	1.50
Average Slope	(%)=	1.00	2.00
Length	(m)=	104.24	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.02	3.083	3.05	6.083	13.21	9.08	3.05
0.167	1.02	3.167	3.05	6.167	13.21	9.17	3.05
0.250	1.02	3.250	3.05	6.250	13.21	9.25	3.05
0.333	2.03	3.333	3.05	6.333	13.21	9.33	2.03
0.417	2.03	3.417	3.05	6.417	13.21	9.42	2.03
0.500	2.03	3.500	3.05	6.500	13.21	9.50	2.03
0.583	1.02	3.583	3.05	6.583	6.10	9.58	2.03
0.667	1.02	3.667	3.05	6.667	6.10	9.67	2.03
0.750	1.02	3.750	3.05	6.750	6.10	9.75	2.03
0.833	2.03	3.833	3.05	6.833	6.10	9.83	2.03
0.917	2.03	3.917	3.05	6.917	6.10	9.92	2.03
1.000	2.03	4.000	3.05	7.000	6.10	10.00	2.03
1.083	1.02	4.083	5.08	7.083	5.08	10.08	2.03
1.167	1.02	4.167	5.08	7.167	5.08	10.17	2.03
1.250	1.02	4.250	5.08	7.250	5.08	10.25	2.03
1.333	2.03	4.333	5.08	7.333	4.06	10.33	1.02
1.417	2.03	4.417	5.08	7.417	4.06	10.42	1.02
1.500	2.03	4.500	5.08	7.500	4.06	10.50	1.02
1.583	1.02	4.583	6.10	7.583	4.06	10.58	2.03
1.667	1.02	4.667	6.10	7.667	4.06	10.67	2.03
1.750	1.02	4.750	6.10	7.750	4.06	10.75	2.03
1.833	2.03	4.833	5.08	7.833	5.08	10.83	1.02
1.917	2.03	4.917	5.08	7.917	5.08	10.92	1.02

2.000	2.03	5.000	5.08	8.000	5.08	11.00	1.02
2.083	3.05	5.083	8.13	8.083	3.05	11.08	2.03
2.167	3.05	5.167	8.13	8.167	3.05	11.17	2.03
2.250	3.05	5.250	8.13	8.250	3.05	11.25	2.03
2.333	3.05	5.333	9.14	8.333	3.05	11.33	1.02
2.417	3.05	5.417	9.14	8.417	3.05	11.42	1.02
2.500	3.05	5.500	9.14	8.500	3.05	11.50	1.02
2.583	3.05	5.583	67.06	8.583	3.05	11.58	2.03
2.667	3.05	5.667	67.06	8.667	3.05	11.67	2.03
2.750	3.05	5.750	67.06	8.750	3.05	11.75	2.03
2.833	2.03	5.833	67.06	8.833	2.03	11.83	1.02
2.917	2.03	5.917	67.06	8.917	2.03	11.92	1.02
3.000	2.03	6.000	67.05	9.000	2.03	12.00	1.02

			TOTALS
Max.Eff.Inten.(mm/hr)=	67.06	46.45	
over (min)	5.00	15.00	
Storage Coeff. (min)=	3.07 (ii)	12.66 (ii)	
Unit Hyd. Tpeak (min)=	5.00	15.00	
Unit Hyd. peak (cms)=	0.27	0.08	
PEAK FLOW (cms)=	0.12	0.10	0.217 (iii)
TIME TO PEAK (hrs)=	6.00	6.08	6.00
RUNOFF VOLUME (mm)=	73.42	41.32	54.16
TOTAL RAINFALL (mm)=	74.42	74.42	74.42
RUNOFF COEFFICIENT =	0.99	0.56	0.73

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 82.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

RESERVOIR(0050)					
IN= 2---> OUT= 1					
DT= 5.0 min	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)	
	0.0000	0.0000	0.0300	0.0710	

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0049)	1.630	0.217	6.00	54.16
OUTFLOW: ID= 1 (0050)	1.630	0.024	7.08	53.79

PEAK FLOW REDUCTION [Qout/Qin](%)= 10.93
TIME SHIFT OF PEAK FLOW (min)= 65.00
MAXIMUM STORAGE USED (ha.m.)= 0.0561

```
V    V   I    SSSSS  U   U    A    L
V    V   I    SS     U   U   A A   L
 V  V    I     SS    U   U  AAAAA  L
 V  V    I      SS   U   U  A   A  L
  VV     I    SSSSS  UUUUU  A   A  LLLLL

 OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
O   O    T      T    H   H   Y Y   MM MM  O   O
O   O    T      T    H   H    Y    M   M  O   O
 OOO     T      T    H   H    Y    M   M   OOO
```

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***** D E T A I L E D O U T P U T *****

Input filename: C:\Program Files (x86)\Visual OTTHYMO 5.0\VO2\voin.dat
Output filename: C:\Users\ygollamudi\AppData\Local\Civica\VH5\10c26041-43a5-4194-90ea-ce2e7e4124a0\aebae1e6-5f24-4693-9515-3e34ebc15bbd\s
Summary filename: C:\Users\ygollamudi\AppData\Local\Civica\VH5\10c26041-43a5-4194-90ea-ce2e7e4124a0\aebae1e6-5f24-4693-9515-3e34ebc15bbd\s

DATE: 08-28-2019 TIME: 04:19:44

USER:

COMMENTS: _____

READ STORM	Filename: C:\Users\ygollamudi\AppD ata\Local\Temp\ e88bcada-d938-48ee-986c-873dd4f72d8d\40131cc1
Ptotal= 82.04 mm	Comments: 50yr

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	2.03	3.25	3.05	6.25	15.24	9.25	3.05
0.50	1.02	3.50	3.05	6.50	14.22	9.50	2.03
0.75	2.03	3.75	4.06	6.75	7.11	9.75	3.05
1.00	1.02	4.00	3.05	7.00	6.10	10.00	2.03
1.25	2.03	4.25	5.08	7.25	5.08	10.25	2.03
1.50	2.03	4.50	6.10	7.50	5.08	10.50	1.02
1.75	1.02	4.75	6.10	7.75	5.08	10.75	2.03
2.00	2.03	5.00	5.08	8.00	4.06	11.00	2.03
2.25	3.05	5.25	10.16	8.25	4.06	11.25	1.02
2.50	3.05	5.50	10.16	8.50	3.05	11.50	2.03
2.75	4.06	5.75	73.15	8.75	3.05	11.75	1.02
3.00	3.05	6.00	74.17	9.00	3.05	12.00	2.03

CALIB	
STANDHYD (0040)	Area (ha)= 0.61

```
|ID= 1 DT= 5.0 min |   Total Imp(%)=  48.00   Dir. Conn.(%)=  48.00
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                        IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=      0.29         0.32
     Dep. Storage     (mm)=      1.00         1.50
     Average Slope     (%)=      1.00         2.00
     Length            (m)=     63.77        40.00
     Mannings n           =     0.013        0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.
```

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.03	3.083	3.05	6.083	15.24	9.08	3.05
0.167	2.03	3.167	3.05	6.167	15.24	9.17	3.05
0.250	2.03	3.250	3.05	6.250	15.24	9.25	3.05
0.333	1.02	3.333	3.05	6.333	14.22	9.33	2.03
0.417	1.02	3.417	3.05	6.417	14.22	9.42	2.03
0.500	1.02	3.500	3.05	6.500	14.22	9.50	2.03
0.583	2.03	3.583	4.06	6.583	7.11	9.58	3.05
0.667	2.03	3.667	4.06	6.667	7.11	9.67	3.05
0.750	2.03	3.750	4.06	6.750	7.11	9.75	3.05
0.833	1.02	3.833	3.05	6.833	6.10	9.83	2.03
0.917	1.02	3.917	3.05	6.917	6.10	9.92	2.03
1.000	1.02	4.000	3.05	7.000	6.10	10.00	2.03
1.083	2.03	4.083	5.08	7.083	5.08	10.08	2.03
1.167	2.03	4.167	5.08	7.167	5.08	10.17	2.03
1.250	2.03	4.250	5.08	7.250	5.08	10.25	2.03
1.333	2.03	4.333	6.10	7.333	5.08	10.33	1.02
1.417	2.03	4.417	6.10	7.417	5.08	10.42	1.02
1.500	2.03	4.500	6.10	7.500	5.08	10.50	1.02
1.583	1.02	4.583	6.10	7.583	5.08	10.58	2.03
1.667	1.02	4.667	6.10	7.667	5.08	10.67	2.03
1.750	1.02	4.750	6.10	7.750	5.08	10.75	2.03
1.833	2.03	4.833	5.08	7.833	4.06	10.83	2.03
1.917	2.03	4.917	5.08	7.917	4.06	10.92	2.03
2.000	2.03	5.000	5.08	8.000	4.06	11.00	2.03
2.083	3.05	5.083	10.16	8.083	4.06	11.08	1.02
2.167	3.05	5.167	10.16	8.167	4.06	11.17	1.02
2.250	3.05	5.250	10.16	8.250	4.06	11.25	1.02
2.333	3.05	5.333	10.16	8.333	3.05	11.33	2.03
2.417	3.05	5.417	10.16	8.417	3.05	11.42	2.03
2.500	3.05	5.500	10.16	8.500	3.05	11.50	2.03
2.583	4.06	5.583	73.15	8.583	3.05	11.58	1.02
2.667	4.06	5.667	73.15	8.667	3.05	11.67	1.02
2.750	4.06	5.750	73.15	8.750	3.05	11.75	1.02
2.833	3.05	5.833	74.17	8.833	3.05	11.83	2.03
2.917	3.05	5.917	74.17	8.917	3.05	11.92	2.03
3.000	3.05	6.000	74.17	9.000	3.05	12.00	2.03

```
     Max.Eff.Inten.(mm/hr)=      74.17        53.37
               over (min)        5.00        15.00
     Storage Coeff.  (min)=       2.20 (ii)   11.27 (ii)
     Unit Hyd. Tpeak (min)=      5.00        15.00
     Unit Hyd. peak  (cms)=      0.30         0.09
                                                    *TOTALS*
     PEAK FLOW       (cms)=      0.06         0.04         0.097 (iii)
     TIME TO PEAK    (hrs)=      6.00         6.08         6.00
     RUNOFF VOLUME    (mm)=     81.04        47.59        63.64
     TOTAL RAINFALL   (mm)=     82.04        82.04        82.04
     RUNOFF COEFFICIENT   =      0.99         0.58         0.78

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  82.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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--------------------
| RESERVOIR(  0043)|
| IN= 2---> OUT= 1 |
| DT=  5.0 min     |     OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
--------------------      (cms)     (ha.m.)   |   (cms)     (ha.m.)
                          0.0000     0.0000   |   0.0100      0.0295

                                  AREA     QPEAK     TPEAK       R.V.
                                  (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  0040)      0.610      0.097      6.00      63.64
   OUTFLOW: ID= 1 (  0043)      0.610      0.009      7.17      62.42

                  PEAK   FLOW   REDUCTION [Qout/Qin](%)=  9.00
                  TIME SHIFT OF PEAK FLOW         (min)= 70.00
                  MAXIMUM  STORAGE   USED       (ha.m.)=  0.0259

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|    READ STORM    |    Filename: C:\Users\ygollamudi\AppD
|                  |              ata\Local\Temp\
|                  |              e88bcada-d938-48ee-986c-873dd4f72d8d\40131cc1
| Ptotal= 82.04 mm |    Comments: 50yr
--------------------
```

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	2.03	3.25	3.05	6.25	15.24	9.25	3.05
0.50	1.02	3.50	3.05	6.50	14.22	9.50	2.03
0.75	2.03	3.75	4.06	6.75	7.11	9.75	3.05
1.00	1.02	4.00	3.05	7.00	6.10	10.00	2.03
1.25	2.03	4.25	5.08	7.25	5.08	10.25	2.03
1.50	2.03	4.50	6.10	7.50	5.08	10.50	1.02
1.75	1.02	4.75	6.10	7.75	5.08	10.75	2.03
2.00	2.03	5.00	5.08	8.00	4.06	11.00	2.03
2.25	3.05	5.25	10.16	8.25	4.06	11.25	1.02
2.50	3.05	5.50	10.16	8.50	3.05	11.50	2.03
2.75	4.06	5.75	73.15	8.75	3.05	11.75	1.02
3.00	3.05	6.00	74.17	9.00	3.05	12.00	2.03

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| CALIB            |
| STANDHYD (  0042)|   Area    (ha)=   1.14
|ID= 1 DT= 5.0 min |   Total Imp(%)=  49.00   Dir. Conn.(%)=  49.00
--------------------

                        IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=      0.56         0.58
     Dep. Storage     (mm)=      1.00         1.50
```

Average Slope	(%)=	1.00	2.00
Length	(m)=	87.18	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.03	3.083	3.05	6.083	15.24	9.08	3.05
0.167	2.03	3.167	3.05	6.167	15.24	9.17	3.05
0.250	2.03	3.250	3.05	6.250	15.24	9.25	3.05
0.333	1.02	3.333	3.05	6.333	14.22	9.33	2.03
0.417	1.02	3.417	3.05	6.417	14.22	9.42	2.03
0.500	1.02	3.500	3.05	6.500	14.22	9.50	2.03
0.583	2.03	3.583	4.06	6.583	7.11	9.58	3.05
0.667	2.03	3.667	4.06	6.667	7.11	9.67	3.05
0.750	2.03	3.750	4.06	6.750	7.11	9.75	3.05
0.833	1.02	3.833	3.05	6.833	6.10	9.83	2.03
0.917	1.02	3.917	3.05	6.917	6.10	9.92	2.03
1.000	1.02	4.000	3.05	7.000	6.10	10.00	2.03
1.083	2.03	4.083	5.08	7.083	5.08	10.08	2.03
1.167	2.03	4.167	5.08	7.167	5.08	10.17	2.03
1.250	2.03	4.250	5.08	7.250	5.08	10.25	2.03
1.333	2.03	4.333	6.10	7.333	5.08	10.33	1.02
1.417	2.03	4.417	6.10	7.417	5.08	10.42	1.02
1.500	2.03	4.500	6.10	7.500	5.08	10.50	1.02
1.583	1.02	4.583	6.10	7.583	5.08	10.58	2.03
1.667	1.02	4.667	6.10	7.667	5.08	10.67	2.03
1.750	1.02	4.750	6.10	7.750	5.08	10.75	2.03
1.833	2.03	4.833	5.08	7.833	4.06	10.83	2.03
1.917	2.03	4.917	5.08	7.917	4.06	10.92	2.03
2.000	2.03	5.000	5.08	8.000	4.06	11.00	2.03
2.083	3.05	5.083	10.16	8.083	4.06	11.08	1.02
2.167	3.05	5.167	10.16	8.167	4.06	11.17	1.02
2.250	3.05	5.250	10.16	8.250	4.06	11.25	1.02
2.333	3.05	5.333	10.16	8.333	3.05	11.33	2.03
2.417	3.05	5.417	10.16	8.417	3.05	11.42	2.03
2.500	3.05	5.500	10.16	8.500	3.05	11.50	2.03
2.583	4.06	5.583	73.15	8.583	3.05	11.58	1.02
2.667	4.06	5.667	73.15	8.667	3.05	11.67	1.02
2.750	4.06	5.750	73.15	8.750	3.05	11.75	1.02
2.833	3.05	5.833	74.17	8.833	3.05	11.83	2.03
2.917	3.05	5.917	74.17	8.917	3.05	11.92	2.03
3.000	3.05	6.000	74.17	9.000	3.05	12.00	2.03

Max.Eff.Inten.(mm/hr)=		74.17	53.37	
over (min)		5.00	15.00	
Storage Coeff. (min)=		2.65 (ii)	11.72 (ii)	
Unit Hyd. Tpeak (min)=		5.00	15.00	
Unit Hyd. peak (cms)=		0.29	0.09	
				TOTALS
PEAK FLOW	(cms)=	0.12	0.07	0.182 (iii)
TIME TO PEAK	(hrs)=	6.00	6.08	6.00
RUNOFF VOLUME	(mm)=	81.04	47.59	63.98
TOTAL RAINFALL	(mm)=	82.04	82.04	82.04
RUNOFF COEFFICIENT	=	0.99	0.58	0.78

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 82.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

RESERVOIR(0044)				
IN= 2---> OUT= 1				
DT= 5.0 min	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
	0.0000	0.0000	0.0160	0.0570

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0042)	1.140	0.182	6.00	63.98
OUTFLOW: ID= 1 (0044)	1.140	0.014	7.75	63.19

PEAK FLOW REDUCTION [Qout/Qin](%)= 7.75
TIME SHIFT OF PEAK FLOW (min)=105.00
MAXIMUM STORAGE USED (ha.m.)= 0.0503

READ STORM	Filename: C:\Users\ygollamudi\AppData\Local\Temp\e88bcada-d938-48ee-986c-873dd4f72d8d\40131cc1
Ptotal= 82.04 mm	Comments: 50yr

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	2.03	3.25	3.05	6.25	15.24	9.25	3.05
0.50	1.02	3.50	3.05	6.50	14.22	9.50	2.03
0.75	2.03	3.75	4.06	6.75	7.11	9.75	3.05
1.00	1.02	4.00	3.05	7.00	6.10	10.00	2.03
1.25	2.03	4.25	5.08	7.25	5.08	10.25	2.03
1.50	2.03	4.50	6.10	7.50	5.08	10.50	1.02
1.75	1.02	4.75	6.10	7.75	5.08	10.75	2.03
2.00	2.03	5.00	5.08	8.00	4.06	11.00	2.03
2.25	3.05	5.25	10.16	8.25	4.06	11.25	1.02
2.50	3.05	5.50	10.16	8.50	3.05	11.50	2.03
2.75	4.06	5.75	73.15	8.75	3.05	11.75	1.02
3.00	3.05	6.00	74.17	9.00	3.05	12.00	2.03

CALIB				
STANDHYD (0051)	Area (ha)= 0.54			
ID= 1 DT= 5.0 min	Total Imp(%)= 52.00		Dir. Conn.(%)= 52.00	
		IMPERVIOUS	PERVIOUS (i)	
Surface Area	(ha)=	0.28	0.26	
Dep. Storage	(mm)=	1.00	1.50	
Average Slope	(%)=	1.00	2.00	
Length	(m)=	60.00	40.00	
Mannings n	=	0.013	0.250	

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.03	3.083	3.05	6.083	15.24	9.08	3.05
0.167	2.03	3.167	3.05	6.167	15.24	9.17	3.05
0.250	2.03	3.250	3.05	6.250	15.24	9.25	3.05
0.333	1.02	3.333	3.05	6.333	14.22	9.33	2.03
0.417	1.02	3.417	3.05	6.417	14.22	9.42	2.03
0.500	1.02	3.500	3.05	6.500	14.22	9.50	2.03
0.583	2.03	3.583	4.06	6.583	7.11	9.58	3.05
0.667	2.03	3.667	4.06	6.667	7.11	9.67	3.05
0.750	2.03	3.750	4.06	6.750	7.11	9.75	3.05
0.833	1.02	3.833	3.05	6.833	6.10	9.83	2.03
0.917	1.02	3.917	3.05	6.917	6.10	9.92	2.03
1.000	1.02	4.000	3.05	7.000	6.10	10.00	2.03
1.083	2.03	4.083	5.08	7.083	5.08	10.08	2.03
1.167	2.03	4.167	5.08	7.167	5.08	10.17	2.03
1.250	2.03	4.250	5.08	7.250	5.08	10.25	2.03
1.333	2.03	4.333	6.10	7.333	5.08	10.33	1.02
1.417	2.03	4.417	6.10	7.417	5.08	10.42	1.02
1.500	2.03	4.500	6.10	7.500	5.08	10.50	1.02
1.583	1.02	4.583	6.10	7.583	5.08	10.58	2.03
1.667	1.02	4.667	6.10	7.667	5.08	10.67	2.03
1.750	1.02	4.750	6.10	7.750	5.08	10.75	2.03
1.833	2.03	4.833	5.08	7.833	4.06	10.83	2.03
1.917	2.03	4.917	5.08	7.917	4.06	10.92	2.03
2.000	2.03	5.000	5.08	8.000	4.06	11.00	2.03
2.083	3.05	5.083	10.16	8.083	4.06	11.08	1.02
2.167	3.05	5.167	10.16	8.167	4.06	11.17	1.02
2.250	3.05	5.250	10.16	8.250	4.06	11.25	1.02
2.333	3.05	5.333	10.16	8.333	3.05	11.33	2.03
2.417	3.05	5.417	10.16	8.417	3.05	11.42	2.03
2.500	3.05	5.500	10.16	8.500	3.05	11.50	2.03
2.583	4.06	5.583	73.15	8.583	3.05	11.58	1.02
2.667	4.06	5.667	73.15	8.667	3.05	11.67	1.02
2.750	4.06	5.750	73.15	8.750	3.05	11.75	1.02
2.833	3.05	5.833	74.17	8.833	3.05	11.83	2.03
2.917	3.05	5.917	74.17	8.917	3.05	11.92	2.03
3.000	3.05	6.000	74.17	9.000	3.05	12.00	2.03

			TOTALS
Max.Eff.Inten.(mm/hr)=	74.17	53.37	
over (min)	5.00	15.00	
Storage Coeff. (min)=	2.12 (ii)	11.19 (ii)	
Unit Hyd. Tpeak (min)=	5.00	15.00	
Unit Hyd. peak (cms)=	0.31	0.09	
PEAK FLOW (cms)=	0.06	0.03	0.088 (iii)
TIME TO PEAK (hrs)=	6.00	6.08	6.00
RUNOFF VOLUME (mm)=	81.04	47.59	64.97
TOTAL RAINFALL (mm)=	82.04	82.04	82.04
RUNOFF COEFFICIENT =	0.99	0.58	0.79

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 82.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

RESERVOIR(0045)| IN= 2---> OUT= 1	DT= 5.0 min	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
		0.0000	0.0000	0.0090	0.0260

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0051)	0.540	0.088	6.00	64.97
OUTFLOW: ID= 1 (0045)	0.540	0.008	7.08	63.62

PEAK FLOW REDUCTION [Qout/Qin](%)= 9.16
TIME SHIFT OF PEAK FLOW (min)= 65.00
MAXIMUM STORAGE USED (ha.m.)= 0.0233

READ STORM	Filename: C:\Users\ygollamudi\AppData\Local\Temp\e88bcada-d938-48ee-986c-873dd4f72d8d\40131cc1
Ptotal= 82.04 mm	Comments: 50yr

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	2.03	3.25	3.05	6.25	15.24	9.25	3.05
0.50	1.02	3.50	3.05	6.50	14.22	9.50	2.03
0.75	2.03	3.75	4.06	6.75	7.11	9.75	3.05
1.00	1.02	4.00	3.05	7.00	6.10	10.00	2.03
1.25	2.03	4.25	5.08	7.25	5.08	10.25	2.03
1.50	2.03	4.50	6.10	7.50	5.08	10.50	1.02
1.75	1.02	4.75	6.10	7.75	5.08	10.75	2.03
2.00	2.03	5.00	5.08	8.00	4.06	11.00	2.03
2.25	3.05	5.25	10.16	8.25	4.06	11.25	1.02
2.50	3.05	5.50	10.16	8.50	3.05	11.50	2.03
2.75	4.06	5.75	73.15	8.75	3.05	11.75	1.02
3.00	3.05	6.00	74.17	9.00	3.05	12.00	2.03

CALIB	STANDHYD (0046)| ID= 1 DT= 5.0 min	Area (ha)= 3.47 Total Imp(%)= 60.00 Dir. Conn.(%)= 60.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	2.08	1.39
Dep. Storage	(mm)=	1.00	1.50
Average Slope	(%)=	1.00	2.00
Length	(m)=	152.10	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr

0.083	2.03	3.083	3.05	6.083	15.24	9.08	3.05
0.167	2.03	3.167	3.05	6.167	15.24	9.17	3.05
0.250	2.03	3.250	3.05	6.250	15.24	9.25	3.05
0.333	1.02	3.333	3.05	6.333	14.22	9.33	2.03
0.417	1.02	3.417	3.05	6.417	14.22	9.42	2.03
0.500	1.02	3.500	3.05	6.500	14.22	9.50	2.03
0.583	2.03	3.583	4.06	6.583	7.11	9.58	3.05
0.667	2.03	3.667	4.06	6.667	7.11	9.67	3.05
0.750	2.03	3.750	4.06	6.750	7.11	9.75	3.05
0.833	1.02	3.833	3.05	6.833	6.10	9.83	2.03
0.917	1.02	3.917	3.05	6.917	6.10	9.92	2.03
1.000	1.02	4.000	3.05	7.000	6.10	10.00	2.03
1.083	2.03	4.083	5.08	7.083	5.08	10.08	2.03
1.167	2.03	4.167	5.08	7.167	5.08	10.17	2.03
1.250	2.03	4.250	5.08	7.250	5.08	10.25	2.03
1.333	2.03	4.333	6.10	7.333	5.08	10.33	1.02
1.417	2.03	4.417	6.10	7.417	5.08	10.42	1.02
1.500	2.03	4.500	6.10	7.500	5.08	10.50	1.02
1.583	1.02	4.583	6.10	7.583	5.08	10.58	2.03
1.667	1.02	4.667	6.10	7.667	5.08	10.67	2.03
1.750	1.02	4.750	6.10	7.750	5.08	10.75	2.03
1.833	2.03	4.833	5.08	7.833	4.06	10.83	2.03
1.917	2.03	4.917	5.08	7.917	4.06	10.92	2.03
2.000	2.03	5.000	5.08	8.000	4.06	11.00	2.03
2.083	3.05	5.083	10.16	8.083	4.06	11.08	1.02
2.167	3.05	5.167	10.16	8.167	4.06	11.17	1.02
2.250	3.05	5.250	10.16	8.250	4.06	11.25	1.02
2.333	3.05	5.333	10.16	8.333	3.05	11.33	2.03
2.417	3.05	5.417	10.16	8.417	3.05	11.42	2.03
2.500	3.05	5.500	10.16	8.500	3.05	11.50	2.03
2.583	4.06	5.583	73.15	8.583	3.05	11.58	1.02
2.667	4.06	5.667	73.15	8.667	3.05	11.67	1.02
2.750	4.06	5.750	73.15	8.750	3.05	11.75	1.02
2.833	3.05	5.833	74.17	8.833	3.05	11.83	2.03
2.917	3.05	5.917	74.17	8.917	3.05	11.92	2.03
3.000	3.05	6.000	74.17	9.000	3.05	12.00	2.03

			TOTALS
Max.Eff.Inten.(mm/hr)=	74.17	53.37	
over (min)	5.00	15.00	
Storage Coeff. (min)=	3.70 (ii)	12.78 (ii)	
Unit Hyd. Tpeak (min)=	5.00	15.00	
Unit Hyd. peak (cms)=	0.25	0.08	
PEAK FLOW (cms)=	0.43	0.16	0.584 (iii)
TIME TO PEAK (hrs)=	6.00	6.08	6.00
RUNOFF VOLUME (mm)=	81.04	47.59	67.66
TOTAL RAINFALL (mm)=	82.04	82.04	82.04
RUNOFF COEFFICIENT =	0.99	0.58	0.82

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 82.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

RESERVOIR(0047)
IN= 2---> OUT= 1

DT= 5.0 min	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
	0.0000	0.0000	0.0670	0.1700

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0046)	3.470	0.584	6.00	67.66
OUTFLOW: ID= 1 (0047)	3.470	0.060	7.00	67.48

PEAK FLOW REDUCTION [Qout/Qin](%)= 10.30
TIME SHIFT OF PEAK FLOW (min)= 60.00
MAXIMUM STORAGE USED (ha.m.)= 0.1528

READ STORM	Filename: C:\Users\ygollamudi\AppData\Local\Temp\e88bcada-d938-48ee-986c-873dd4f72d8d\40131cc1
Ptotal= 82.04 mm	Comments: 50yr

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	2.03	3.25	3.05	6.25	15.24	9.25	3.05
0.50	1.02	3.50	3.05	6.50	14.22	9.50	2.03
0.75	2.03	3.75	4.06	6.75	7.11	9.75	3.05
1.00	1.02	4.00	3.05	7.00	6.10	10.00	2.03
1.25	2.03	4.25	5.08	7.25	5.08	10.25	2.03
1.50	2.03	4.50	6.10	7.50	5.08	10.50	1.02
1.75	1.02	4.75	6.10	7.75	5.08	10.75	2.03
2.00	2.03	5.00	5.08	8.00	4.06	11.00	2.03
2.25	3.05	5.25	10.16	8.25	4.06	11.25	1.02
2.50	3.05	5.50	10.16	8.50	3.05	11.50	2.03
2.75	4.06	5.75	73.15	8.75	3.05	11.75	1.02
3.00	3.05	6.00	74.17	9.00	3.05	12.00	2.03

CALIB	
STANDHYD (0041)	Area (ha)= 1.62
ID= 1 DT= 5.0 min	Total Imp(%)= 46.00 Dir. Conn.(%)= 46.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.75	0.87
Dep. Storage	(mm)=	1.00	1.50
Average Slope	(%)=	1.00	2.00
Length	(m)=	103.92	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.03	3.083	3.05	6.083	15.24	9.08	3.05
0.167	2.03	3.167	3.05	6.167	15.24	9.17	3.05
0.250	2.03	3.250	3.05	6.250	15.24	9.25	3.05
0.333	1.02	3.333	3.05	6.333	14.22	9.33	2.03
0.417	1.02	3.417	3.05	6.417	14.22	9.42	2.03

0.500	1.02	3.500	3.05	6.500	14.22	9.50	2.03
0.583	2.03	3.583	4.06	6.583	7.11	9.58	3.05
0.667	2.03	3.667	4.06	6.667	7.11	9.67	3.05
0.750	2.03	3.750	4.06	6.750	7.11	9.75	3.05
0.833	1.02	3.833	3.05	6.833	6.10	9.83	2.03
0.917	1.02	3.917	3.05	6.917	6.10	9.92	2.03
1.000	1.02	4.000	3.05	7.000	6.10	10.00	2.03
1.083	2.03	4.083	5.08	7.083	5.08	10.08	2.03
1.167	2.03	4.167	5.08	7.167	5.08	10.17	2.03
1.250	2.03	4.250	5.08	7.250	5.08	10.25	2.03
1.333	2.03	4.333	6.10	7.333	5.08	10.33	1.02
1.417	2.03	4.417	6.10	7.417	5.08	10.42	1.02
1.500	2.03	4.500	6.10	7.500	5.08	10.50	1.02
1.583	1.02	4.583	6.10	7.583	5.08	10.58	2.03
1.667	1.02	4.667	6.10	7.667	5.08	10.67	2.03
1.750	1.02	4.750	6.10	7.750	5.08	10.75	2.03
1.833	2.03	4.833	5.08	7.833	4.06	10.83	2.03
1.917	2.03	4.917	5.08	7.917	4.06	10.92	2.03
2.000	2.03	5.000	5.08	8.000	4.06	11.00	2.03
2.083	3.05	5.083	10.16	8.083	4.06	11.08	1.02
2.167	3.05	5.167	10.16	8.167	4.06	11.17	1.02
2.250	3.05	5.250	10.16	8.250	4.06	11.25	1.02
2.333	3.05	5.333	10.16	8.333	3.05	11.33	2.03
2.417	3.05	5.417	10.16	8.417	3.05	11.42	2.03
2.500	3.05	5.500	10.16	8.500	3.05	11.50	2.03
2.583	4.06	5.583	73.15	8.583	3.05	11.58	1.02
2.667	4.06	5.667	73.15	8.667	3.05	11.67	1.02
2.750	4.06	5.750	73.15	8.750	3.05	11.75	1.02
2.833	3.05	5.833	74.17	8.833	3.05	11.83	2.03
2.917	3.05	5.917	74.17	8.917	3.05	11.92	2.03
3.000	3.05	6.000	74.17	9.000	3.05	12.00	2.03

Max.Eff.Inten.(mm/hr)=	74.17	58.81	
over (min)	5.00	15.00	
Storage Coeff. (min)=	2.95 (ii)	11.67 (ii)	
Unit Hyd. Tpeak (min)=	5.00	15.00	
Unit Hyd. peak (cms)=	0.28	0.09	
			TOTALS
PEAK FLOW (cms)=	0.15	0.11	0.267 (iii)
TIME TO PEAK (hrs)=	6.00	6.08	6.00
RUNOFF VOLUME (mm)=	81.04	53.22	66.01
TOTAL RAINFALL (mm)=	82.04	82.04	82.04
RUNOFF COEFFICIENT =	0.99	0.65	0.80

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 86.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

RESERVOIR(0048) IN= 2---> OUT= 1 DT= 5.0 min	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
	0.0000	0.0000	0.0570	0.0650

	AREA	QPEAK	TPEAK	R.V.
(ha)	1.620	0.267	6.00	66.01
(cms)	1.620	0.051	6.58	65.84
(hrs)				
(mm)				

INFLOW : ID= 2 (0041)
OUTFLOW: ID= 1 (0048)

PEAK FLOW REDUCTION [Qout/Qin](%)= 19.08
TIME SHIFT OF PEAK FLOW (min)= 35.00
MAXIMUM STORAGE USED (ha.m.)= 0.0582

READ STORM	Filename: C:\Users\ygollamudi\AppData\Local\Temp\e88bcada-d938-48ee-986c-873dd4f72d8d\40131cc1
Ptotal= 82.04 mm	Comments: 50yr

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	2.03	3.25	3.05	6.25	15.24	9.25	3.05
0.50	1.02	3.50	3.05	6.50	14.22	9.50	2.03
0.75	2.03	3.75	4.06	6.75	7.11	9.75	3.05
1.00	1.02	4.00	3.05	7.00	6.10	10.00	2.03
1.25	2.03	4.25	5.08	7.25	5.08	10.25	2.03
1.50	2.03	4.50	6.10	7.50	5.08	10.50	1.02
1.75	1.02	4.75	6.10	7.75	5.08	10.75	2.03
2.00	2.03	5.00	5.08	8.00	4.06	11.00	2.03
2.25	3.05	5.25	10.16	8.25	4.06	11.25	1.02
2.50	3.05	5.50	10.16	8.50	3.05	11.50	2.03
2.75	4.06	5.75	73.15	8.75	3.05	11.75	1.02
3.00	3.05	6.00	74.17	9.00	3.05	12.00	2.03

CALIB STANDHYD (0049) ID= 1 DT= 5.0 min	Area (ha)= 1.63 Total Imp(%)= 40.00 Dir. Conn.(%)= 40.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.65	0.98
Dep. Storage	(mm)=	1.00	1.50
Average Slope	(%)=	1.00	2.00
Length	(m)=	104.24	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.03	3.083	3.05	6.083	15.24	9.08	3.05
0.167	2.03	3.167	3.05	6.167	15.24	9.17	3.05
0.250	2.03	3.250	3.05	6.250	15.24	9.25	3.05
0.333	1.02	3.333	3.05	6.333	14.22	9.33	2.03
0.417	1.02	3.417	3.05	6.417	14.22	9.42	2.03
0.500	1.02	3.500	3.05	6.500	14.22	9.50	2.03
0.583	2.03	3.583	4.06	6.583	7.11	9.58	3.05
0.667	2.03	3.667	4.06	6.667	7.11	9.67	3.05
0.750	2.03	3.750	4.06	6.750	7.11	9.75	3.05
0.833	1.02	3.833	3.05	6.833	6.10	9.83	2.03

0.917	1.02	3.917	3.05	6.917	6.10	9.92	2.03
1.000	1.02	4.000	3.05	7.000	6.10	10.00	2.03
1.083	2.03	4.083	5.08	7.083	5.08	10.08	2.03
1.167	2.03	4.167	5.08	7.167	5.08	10.17	2.03
1.250	2.03	4.250	5.08	7.250	5.08	10.25	2.03
1.333	2.03	4.333	6.10	7.333	5.08	10.33	1.02
1.417	2.03	4.417	6.10	7.417	5.08	10.42	1.02
1.500	2.03	4.500	6.10	7.500	5.08	10.50	1.02
1.583	1.02	4.583	6.10	7.583	5.08	10.58	2.03
1.667	1.02	4.667	6.10	7.667	5.08	10.67	2.03
1.750	1.02	4.750	6.10	7.750	5.08	10.75	2.03
1.833	2.03	4.833	5.08	7.833	4.06	10.83	2.03
1.917	2.03	4.917	5.08	7.917	4.06	10.92	2.03
2.000	2.03	5.000	5.08	8.000	4.06	11.00	2.03
2.083	3.05	5.083	10.16	8.083	4.06	11.08	1.02
2.167	3.05	5.167	10.16	8.167	4.06	11.17	1.02
2.250	3.05	5.250	10.16	8.250	4.06	11.25	1.02
2.333	3.05	5.333	10.16	8.333	3.05	11.33	2.03
2.417	3.05	5.417	10.16	8.417	3.05	11.42	2.03
2.500	3.05	5.500	10.16	8.500	3.05	11.50	2.03
2.583	4.06	5.583	73.15	8.583	3.05	11.58	1.02
2.667	4.06	5.667	73.15	8.667	3.05	11.67	1.02
2.750	4.06	5.750	73.15	8.750	3.05	11.75	1.02
2.833	3.05	5.833	74.17	8.833	3.05	11.83	2.03
2.917	3.05	5.917	74.17	8.917	3.05	11.92	2.03
3.000	3.05	6.000	74.17	9.000	3.05	12.00	2.03

Max.Eff.Inten.(mm/hr)=	74.17	53.37	
over (min)	5.00	15.00	
Storage Coeff. (min)=	2.95 (ii)	12.02 (ii)	
Unit Hyd. Tpeak (min)=	5.00	15.00	
Unit Hyd. peak (cms)=	0.28	0.09	
			TOTALS
PEAK FLOW (cms)=	0.13	0.11	0.246 (iii)
TIME TO PEAK (hrs)=	6.00	6.08	6.00
RUNOFF VOLUME (mm)=	81.04	47.59	60.97
TOTAL RAINFALL (mm)=	82.04	82.04	82.04
RUNOFF COEFFICIENT =	0.99	0.58	0.74

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 82.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

RESERVOIR(0050)|				
IN= 2---> OUT= 1 |				
DT= 5.0 min |	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
	0.0000	0.0000	0.0300	0.0710

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0049)	1.630	0.246	6.00	60.97
OUTFLOW: ID= 1 (0050)	1.630	0.027	7.08	60.61

PEAK FLOW REDUCTION [Qout/Qin](%)= 10.87

TIME SHIFT OF PEAK FLOW (min)= 65.00
MAXIMUM STORAGE USED (ha.m.)= 0.0634

```
      V    V   I    SSSSS  U   U    A    L
      V    V   I    SS     U   U   A A   L
       V  V    I     SS    U   U  AAAAA  L
       V  V    I      SS   U   U  A   A  L
        VV     I    SSSSS  UUUUU  A   A  LLLLL

       OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
      O   O    T      T    H   H   Y Y   MM MM  O   O
      O   O    T      T    H   H    Y    M   M  O   O
       OOO     T      T    H   H    Y    M   M   OOO
```

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***** D E T A I L E D O U T P U T *****

Input filename: C:\Program Files (x86)\Visual OTTHYMO 5.0\VO2\voin.dat
Output filename: C:\Users\ygollamudi\AppData\Local\Civica\VH5\10c26041-43a5-4194-90ea-ce2e7e4124a0\93c7d54c-5798-4269-a4f8-11beee4c36fa\s
Summary filename: C:\Users\ygollamudi\AppData\Local\Civica\VH5\10c26041-43a5-4194-90ea-ce2e7e4124a0\93c7d54c-5798-4269-a4f8-11beee4c36fa\s

DATE: 08-28-2019 TIME: 04:19:44

USER:

COMMENTS: _____

```
  ************************************************
  ** SIMULATION : Run 06                        **
  ************************************************
```

| READ STORM |	Filename: C:\Users\ygollamudi\AppData\Local\Temp\e88bcada-d938-48ee-986c-873dd4f72d8d\07688420
Ptotal= 89.92 mm	Comments: 100yr

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	2.03	3.25	4.06	6.25	16.26	9.25	3.05
0.50	2.03	3.50	3.05	6.50	16.26	9.50	3.05
0.75	1.02	3.75	4.06	6.75	7.11	9.75	2.03
1.00	2.03	4.00	3.05	7.00	7.11	10.00	3.05
1.25	2.03	4.25	7.11	7.25	5.08	10.25	2.03

1.50	2.03	4.50	6.10	7.50	5.08	10.50	1.02
1.75	1.02	4.75	6.10	7.75	6.10	10.75	2.03
2.00	2.03	5.00	6.10	8.00	5.08	11.00	2.03
2.25	4.06	5.25	11.18	8.25	4.06	11.25	2.03
2.50	3.05	5.50	11.18	8.50	3.05	11.50	1.02
2.75	4.06	5.75	80.26	8.75	4.06	11.75	2.03
3.00	3.05	6.00	81.28	9.00	3.05	12.00	2.03

CALIB	
STANDHYD (0040)	Area (ha)= 0.61
ID= 1 DT= 5.0 min	Total Imp(%)= 48.00 Dir. Conn.(%)= 48.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.29	0.32
Dep. Storage	(mm)=	1.00	1.50
Average Slope	(%)=	1.00	2.00
Length	(m)=	63.77	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.03	3.083	4.06	6.083	16.26	9.08	3.05
0.167	2.03	3.167	4.06	6.167	16.26	9.17	3.05
0.250	2.03	3.250	4.06	6.250	16.26	9.25	3.05
0.333	2.03	3.333	3.05	6.333	16.26	9.33	3.05
0.417	2.03	3.417	3.05	6.417	16.26	9.42	3.05
0.500	2.03	3.500	3.05	6.500	16.26	9.50	3.05
0.583	1.02	3.583	4.06	6.583	7.11	9.58	2.03
0.667	1.02	3.667	4.06	6.667	7.11	9.67	2.03
0.750	1.02	3.750	4.06	6.750	7.11	9.75	2.03
0.833	2.03	3.833	3.05	6.833	7.11	9.83	3.05
0.917	2.03	3.917	3.05	6.917	7.11	9.92	3.05
1.000	2.03	4.000	3.05	7.000	7.11	10.00	3.05
1.083	2.03	4.083	7.11	7.083	5.08	10.08	2.03
1.167	2.03	4.167	7.11	7.167	5.08	10.17	2.03
1.250	2.03	4.250	7.11	7.250	5.08	10.25	2.03
1.333	2.03	4.333	6.10	7.333	5.08	10.33	1.02
1.417	2.03	4.417	6.10	7.417	5.08	10.42	1.02
1.500	2.03	4.500	6.10	7.500	5.08	10.50	1.02
1.583	1.02	4.583	6.10	7.583	6.10	10.58	2.03
1.667	1.02	4.667	6.10	7.667	6.10	10.67	2.03
1.750	1.02	4.750	6.10	7.750	6.10	10.75	2.03
1.833	2.03	4.833	6.10	7.833	5.08	10.83	2.03
1.917	2.03	4.917	6.10	7.917	5.08	10.92	2.03
2.000	2.03	5.000	6.10	8.000	5.08	11.00	2.03
2.083	4.06	5.083	11.18	8.083	4.06	11.08	2.03
2.167	4.06	5.167	11.18	8.167	4.06	11.17	2.03
2.250	4.06	5.250	11.18	8.250	4.06	11.25	2.03
2.333	3.05	5.333	11.18	8.333	3.05	11.33	1.02
2.417	3.05	5.417	11.18	8.417	3.05	11.42	1.02
2.500	3.05	5.500	11.18	8.500	3.05	11.50	1.02
2.583	4.06	5.583	80.26	8.583	4.06	11.58	2.03
2.667	4.06	5.667	80.26	8.667	4.06	11.67	2.03
2.750	4.06	5.750	80.26	8.750	4.06	11.75	2.03
2.833	3.05	5.833	81.28	8.833	3.05	11.83	2.03
2.917	3.05	5.917	81.28	8.917	3.05	11.92	2.03
3.000	3.05	6.000	81.28	9.000	3.05	12.00	2.03

			TOTALS
Max.Eff.Inten.(mm/hr)=	81.28	60.50	
over (min)	5.00	15.00	
Storage Coeff. (min)=	2.12 (ii)	10.75 (ii)	
Unit Hyd. Tpeak (min)=	5.00	15.00	
Unit Hyd. peak (cms)=	0.31	0.09	
PEAK FLOW (cms)=	0.07	0.04	0.109 (iii)
TIME TO PEAK (hrs)=	6.00	6.08	6.00
RUNOFF VOLUME (mm)=	88.92	54.22	70.87
TOTAL RAINFALL (mm)=	89.92	89.92	89.92
RUNOFF COEFFICIENT =	0.99	0.60	0.79

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 82.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

RESERVOIR(0043)				
IN= 2---> OUT= 1				
DT= 5.0 min	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
	0.0000	0.0000	0.0100	0.0295

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0040)	0.610	0.109	6.00	70.87
OUTFLOW: ID= 1 (0043)	0.610	0.010	7.08	69.65

PEAK FLOW REDUCTION [Qout/Qin](%)= 8.97
TIME SHIFT OF PEAK FLOW (min)= 65.00
MAXIMUM STORAGE USED (ha.m.)= 0.0288

READ STORM	Filename: C:\Users\ygollamudi\AppData\Local\Temp\e88bcada-d938-48ee-986c-873dd4f72d8d\07688420
Ptotal= 89.92 mm	Comments: 100yr

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	2.03	3.25	4.06	6.25	16.26	9.25	3.05
0.50	2.03	3.50	3.05	6.50	16.26	9.50	3.05
0.75	1.02	3.75	4.06	6.75	7.11	9.75	2.03
1.00	2.03	4.00	3.05	7.00	7.11	10.00	3.05
1.25	2.03	4.25	7.11	7.25	5.08	10.25	2.03
1.50	2.03	4.50	6.10	7.50	5.08	10.50	1.02
1.75	1.02	4.75	6.10	7.75	6.10	10.75	2.03
2.00	2.03	5.00	6.10	8.00	5.08	11.00	2.03
2.25	4.06	5.25	11.18	8.25	4.06	11.25	2.03
2.50	3.05	5.50	11.18	8.50	3.05	11.50	1.02

2.75	4.06	5.75	80.26	8.75	4.06	11.75	2.03
3.00	3.05	6.00	81.28	9.00	3.05	12.00	2.03

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| CALIB            |
| STANDHYD (  0042)|   Area    (ha)=   1.14
|ID= 1 DT= 5.0 min |   Total Imp(%)=  49.00   Dir. Conn.(%)=  49.00
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```

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.56	0.58
Dep. Storage	(mm)=	1.00	1.50
Average Slope	(%)=	1.00	2.00
Length	(m)=	87.18	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.03	3.083	4.06	6.083	16.26	9.08	3.05
0.167	2.03	3.167	4.06	6.167	16.26	9.17	3.05
0.250	2.03	3.250	4.06	6.250	16.26	9.25	3.05
0.333	2.03	3.333	3.05	6.333	16.26	9.33	3.05
0.417	2.03	3.417	3.05	6.417	16.26	9.42	3.05
0.500	2.03	3.500	3.05	6.500	16.26	9.50	3.05
0.583	1.02	3.583	4.06	6.583	7.11	9.58	2.03
0.667	1.02	3.667	4.06	6.667	7.11	9.67	2.03
0.750	1.02	3.750	4.06	6.750	7.11	9.75	2.03
0.833	2.03	3.833	3.05	6.833	7.11	9.83	3.05
0.917	2.03	3.917	3.05	6.917	7.11	9.92	3.05
1.000	2.03	4.000	3.05	7.000	7.11	10.00	3.05
1.083	2.03	4.083	7.11	7.083	5.08	10.08	2.03
1.167	2.03	4.167	7.11	7.167	5.08	10.17	2.03
1.250	2.03	4.250	7.11	7.250	5.08	10.25	2.03
1.333	2.03	4.333	6.10	7.333	5.08	10.33	1.02
1.417	2.03	4.417	6.10	7.417	5.08	10.42	1.02
1.500	2.03	4.500	6.10	7.500	5.08	10.50	1.02
1.583	1.02	4.583	6.10	7.583	6.10	10.58	2.03
1.667	1.02	4.667	6.10	7.667	6.10	10.67	2.03
1.750	1.02	4.750	6.10	7.750	6.10	10.75	2.03
1.833	2.03	4.833	6.10	7.833	5.08	10.83	2.03
1.917	2.03	4.917	6.10	7.917	5.08	10.92	2.03
2.000	2.03	5.000	6.10	8.000	5.08	11.00	2.03
2.083	4.06	5.083	11.18	8.083	4.06	11.08	2.03
2.167	4.06	5.167	11.18	8.167	4.06	11.17	2.03
2.250	4.06	5.250	11.18	8.250	4.06	11.25	2.03
2.333	3.05	5.333	11.18	8.333	3.05	11.33	1.02
2.417	3.05	5.417	11.18	8.417	3.05	11.42	1.02
2.500	3.05	5.500	11.18	8.500	3.05	11.50	1.02
2.583	4.06	5.583	80.26	8.583	4.06	11.58	2.03
2.667	4.06	5.667	80.26	8.667	4.06	11.67	2.03
2.750	4.06	5.750	80.26	8.750	4.06	11.75	2.03
2.833	3.05	5.833	81.28	8.833	3.05	11.83	2.03
2.917	3.05	5.917	81.28	8.917	3.05	11.92	2.03
3.000	3.05	6.000	81.28	9.000	3.05	12.00	2.03

Max.Eff.Inten.(mm/hr)=		81.28	60.50
over (min)		5.00	15.00
Storage Coeff. (min)=		2.56 (ii)	11.19 (ii)
Unit Hyd. Tpeak (min)=		5.00	15.00
Unit Hyd. peak (cms)=		0.29	0.09
			TOTALS
PEAK FLOW	(cms)=	0.13	0.08	0.204 (iii)
TIME TO PEAK	(hrs)=	6.00	6.08	6.00
RUNOFF VOLUME	(mm)=	88.92	54.22	71.22
TOTAL RAINFALL	(mm)=	89.92	89.92	89.92
RUNOFF COEFFICIENT	=	0.99	0.60	0.79

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 82.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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--------------------
| RESERVOIR(  0044)|
| IN= 2---> OUT= 1 |
| DT=  5.0 min     |     OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
--------------------      (cms)     (ha.m.)   |   (cms)     (ha.m.)
                          0.0000     0.0000   |   0.0160      0.0570

                                AREA     QPEAK     TPEAK       R.V.
                                (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  0042)      1.140      0.204      6.00      71.22
   OUTFLOW: ID= 1 (  0044)      1.140      0.016      7.83      70.42

                PEAK   FLOW   REDUCTION [Qout/Qin](%)=  7.70
                TIME SHIFT OF PEAK FLOW         (min)=110.00
                MAXIMUM  STORAGE   USED       (ha.m.)=  0.0560
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|    READ STORM    |    Filename: C:\Users\ygollamudi\AppD
|                  |              ata\Local\Temp\
|                  |              e88bcada-d938-48ee-986c-873dd4f72d8d\07688420
| Ptotal= 89.92 mm |    Comments: 100yr
--------------------
```

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	2.03	3.25	4.06	6.25	16.26	9.25	3.05
0.50	2.03	3.50	3.05	6.50	16.26	9.50	3.05
0.75	1.02	3.75	4.06	6.75	7.11	9.75	2.03
1.00	2.03	4.00	3.05	7.00	7.11	10.00	3.05
1.25	2.03	4.25	7.11	7.25	5.08	10.25	2.03
1.50	2.03	4.50	6.10	7.50	5.08	10.50	1.02
1.75	1.02	4.75	6.10	7.75	6.10	10.75	2.03
2.00	2.03	5.00	6.10	8.00	5.08	11.00	2.03
2.25	4.06	5.25	11.18	8.25	4.06	11.25	2.03
2.50	3.05	5.50	11.18	8.50	3.05	11.50	1.02
2.75	4.06	5.75	80.26	8.75	4.06	11.75	2.03
3.00	3.05	6.00	81.28	9.00	3.05	12.00	2.03

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--------------------
| CALIB            |
| STANDHYD (  0051)|   Area    (ha)=   0.54
|ID= 1 DT= 5.0 min |   Total Imp(%)=  52.00   Dir. Conn.(%)=  52.00
--------------------
                          IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.28         0.26
     Dep. Storage     (mm)=       1.00         1.50
     Average Slope     (%)=       1.00         2.00
     Length            (m)=      60.00        40.00
     Mannings n             =     0.013        0.250

        NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.
```

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.03	3.083	4.06	6.083	16.26	9.08	3.05
0.167	2.03	3.167	4.06	6.167	16.26	9.17	3.05
0.250	2.03	3.250	4.06	6.250	16.26	9.25	3.05
0.333	2.03	3.333	3.05	6.333	16.26	9.33	3.05
0.417	2.03	3.417	3.05	6.417	16.26	9.42	3.05
0.500	2.03	3.500	3.05	6.500	16.26	9.50	3.05
0.583	1.02	3.583	4.06	6.583	7.11	9.58	2.03
0.667	1.02	3.667	4.06	6.667	7.11	9.67	2.03
0.750	1.02	3.750	4.06	6.750	7.11	9.75	2.03
0.833	2.03	3.833	3.05	6.833	7.11	9.83	3.05
0.917	2.03	3.917	3.05	6.917	7.11	9.92	3.05
1.000	2.03	4.000	3.05	7.000	7.11	10.00	3.05
1.083	2.03	4.083	7.11	7.083	5.08	10.08	2.03
1.167	2.03	4.167	7.11	7.167	5.08	10.17	2.03
1.250	2.03	4.250	7.11	7.250	5.08	10.25	2.03
1.333	2.03	4.333	6.10	7.333	5.08	10.33	1.02
1.417	2.03	4.417	6.10	7.417	5.08	10.42	1.02
1.500	2.03	4.500	6.10	7.500	5.08	10.50	1.02
1.583	1.02	4.583	6.10	7.583	6.10	10.58	2.03
1.667	1.02	4.667	6.10	7.667	6.10	10.67	2.03
1.750	1.02	4.750	6.10	7.750	6.10	10.75	2.03
1.833	2.03	4.833	6.10	7.833	5.08	10.83	2.03
1.917	2.03	4.917	6.10	7.917	5.08	10.92	2.03
2.000	2.03	5.000	6.10	8.000	5.08	11.00	2.03
2.083	4.06	5.083	11.18	8.083	4.06	11.08	2.03
2.167	4.06	5.167	11.18	8.167	4.06	11.17	2.03
2.250	4.06	5.250	11.18	8.250	4.06	11.25	2.03
2.333	3.05	5.333	11.18	8.333	3.05	11.33	1.02
2.417	3.05	5.417	11.18	8.417	3.05	11.42	1.02
2.500	3.05	5.500	11.18	8.500	3.05	11.50	1.02
2.583	4.06	5.583	80.26	8.583	4.06	11.58	2.03
2.667	4.06	5.667	80.26	8.667	4.06	11.67	2.03
2.750	4.06	5.750	80.26	8.750	4.06	11.75	2.03
2.833	3.05	5.833	81.28	8.833	3.05	11.83	2.03
2.917	3.05	5.917	81.28	8.917	3.05	11.92	2.03
3.000	3.05	6.000	81.28	9.000	3.05	12.00	2.03

```
     Max.Eff.Inten.(mm/hr)=      81.28        60.50
               over (min)         5.00        15.00
     Storage Coeff.  (min)=       2.04 (ii)   10.67 (ii)
     Unit Hyd. Tpeak (min)=       5.00        15.00
     Unit Hyd. peak  (cms)=       0.31         0.09
                                                    *TOTALS*
     PEAK FLOW       (cms)=       0.06         0.04          0.099 (iii)
     TIME TO PEAK    (hrs)=       6.00         6.00           6.00
     RUNOFF VOLUME    (mm)=      88.92        54.22          72.25
     TOTAL RAINFALL   (mm)=      89.92        89.92          89.92
     RUNOFF COEFFICIENT   =       0.99         0.60           0.80

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  82.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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--------------------
| RESERVOIR(  0045)|
| IN= 2---> OUT= 1 |
| DT=  5.0 min     |     OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
--------------------      (cms)     (ha.m.)   |   (cms)     (ha.m.)
                           0.0000     0.0000   |   0.0090      0.0260

                                  AREA     QPEAK     TPEAK       R.V.
                                  (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  0051)      0.540      0.099      6.00      72.25
   OUTFLOW: ID= 1 (  0045)      0.540      0.009      7.08      70.90

                  PEAK   FLOW   REDUCTION [Qout/Qin](%)=  9.13
                  TIME SHIFT OF PEAK FLOW         (min)= 65.00
                  MAXIMUM  STORAGE   USED       (ha.m.)=  0.0260

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|    READ STORM    |    Filename: C:\Users\ygollamudi\AppD
|                  |              ata\Local\Temp\
|                  |              e88bcada-d938-48ee-986c-873dd4f72d8d\07688420
| Ptotal= 89.92 mm |    Comments: 100yr
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```

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	2.03	3.25	4.06	6.25	16.26	9.25	3.05
0.50	2.03	3.50	3.05	6.50	16.26	9.50	3.05
0.75	1.02	3.75	4.06	6.75	7.11	9.75	2.03
1.00	2.03	4.00	3.05	7.00	7.11	10.00	3.05
1.25	2.03	4.25	7.11	7.25	5.08	10.25	2.03
1.50	2.03	4.50	6.10	7.50	5.08	10.50	1.02
1.75	1.02	4.75	6.10	7.75	6.10	10.75	2.03
2.00	2.03	5.00	6.10	8.00	5.08	11.00	2.03
2.25	4.06	5.25	11.18	8.25	4.06	11.25	2.03
2.50	3.05	5.50	11.18	8.50	3.05	11.50	1.02
2.75	4.06	5.75	80.26	8.75	4.06	11.75	2.03
3.00	3.05	6.00	81.28	9.00	3.05	12.00	2.03

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| CALIB            |
| STANDHYD (  0046)|   Area    (ha)=   3.47
|ID= 1 DT= 5.0 min |   Total Imp(%)=  60.00   Dir. Conn.(%)=  60.00
--------------------
```

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	2.08	1.39
Dep. Storage	(mm)=	1.00	1.50
Average Slope	(%)=	1.00	2.00
Length	(m)=	152.10	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.03	3.083	4.06	6.083	16.26	9.08	3.05
0.167	2.03	3.167	4.06	6.167	16.26	9.17	3.05
0.250	2.03	3.250	4.06	6.250	16.26	9.25	3.05
0.333	2.03	3.333	3.05	6.333	16.26	9.33	3.05
0.417	2.03	3.417	3.05	6.417	16.26	9.42	3.05
0.500	2.03	3.500	3.05	6.500	16.26	9.50	3.05
0.583	1.02	3.583	4.06	6.583	7.11	9.58	2.03
0.667	1.02	3.667	4.06	6.667	7.11	9.67	2.03
0.750	1.02	3.750	4.06	6.750	7.11	9.75	2.03
0.833	2.03	3.833	3.05	6.833	7.11	9.83	3.05
0.917	2.03	3.917	3.05	6.917	7.11	9.92	3.05
1.000	2.03	4.000	3.05	7.000	7.11	10.00	3.05
1.083	2.03	4.083	7.11	7.083	5.08	10.08	2.03
1.167	2.03	4.167	7.11	7.167	5.08	10.17	2.03
1.250	2.03	4.250	7.11	7.250	5.08	10.25	2.03
1.333	2.03	4.333	6.10	7.333	5.08	10.33	1.02
1.417	2.03	4.417	6.10	7.417	5.08	10.42	1.02
1.500	2.03	4.500	6.10	7.500	5.08	10.50	1.02
1.583	1.02	4.583	6.10	7.583	6.10	10.58	2.03
1.667	1.02	4.667	6.10	7.667	6.10	10.67	2.03
1.750	1.02	4.750	6.10	7.750	6.10	10.75	2.03
1.833	2.03	4.833	6.10	7.833	5.08	10.83	2.03
1.917	2.03	4.917	6.10	7.917	5.08	10.92	2.03
2.000	2.03	5.000	6.10	8.000	5.08	11.00	2.03
2.083	4.06	5.083	11.18	8.083	4.06	11.08	2.03
2.167	4.06	5.167	11.18	8.167	4.06	11.17	2.03
2.250	4.06	5.250	11.18	8.250	4.06	11.25	2.03
2.333	3.05	5.333	11.18	8.333	3.05	11.33	1.02
2.417	3.05	5.417	11.18	8.417	3.05	11.42	1.02
2.500	3.05	5.500	11.18	8.500	3.05	11.50	1.02
2.583	4.06	5.583	80.26	8.583	4.06	11.58	2.03
2.667	4.06	5.667	80.26	8.667	4.06	11.67	2.03
2.750	4.06	5.750	80.26	8.750	4.06	11.75	2.03
2.833	3.05	5.833	81.28	8.833	3.05	11.83	2.03
2.917	3.05	5.917	81.28	8.917	3.05	11.92	2.03
3.000	3.05	6.000	81.28	9.000	3.05	12.00	2.03

Max.Eff.Inten.(mm/hr)=		81.28	60.50	
over (min)		5.00	15.00	
Storage Coeff. (min)=		3.57 (ii)	12.20 (ii)	
Unit Hyd. Tpeak (min)=		5.00	15.00	
Unit Hyd. peak (cms)=		0.26	0.09	
				TOTALS
PEAK FLOW	(cms)=	0.47	0.18	0.651 (iii)
TIME TO PEAK	(hrs)=	6.00	6.08	6.00
RUNOFF VOLUME	(mm)=	88.92	54.22	75.04
TOTAL RAINFALL	(mm)=	89.92	89.92	89.92
RUNOFF COEFFICIENT	=	0.99	0.60	0.83

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 82.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

RESERVOIR(0047)	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
IN= 2---> OUT= 1				
DT= 5.0 min	0.0000	0.0000	0.0670	0.1700

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0046)	3.470	0.651	6.00	75.04
OUTFLOW: ID= 1 (0047)	3.470	0.067	7.00	74.85

PEAK FLOW REDUCTION [Qout/Qin](%)= 10.28
TIME SHIFT OF PEAK FLOW (min)= 60.00
MAXIMUM STORAGE USED (ha.m.)= 0.1697

READ STORM	Filename: C:\Users\ygollamudi\AppData\Local\Temp\e88bcada-d938-48ee-986c-873dd4f72d8d\07688420
Ptotal= 89.92 mm	Comments: 100yr

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	2.03	3.25	4.06	6.25	16.26	9.25	3.05
0.50	2.03	3.50	3.05	6.50	16.26	9.50	3.05
0.75	1.02	3.75	4.06	6.75	7.11	9.75	2.03
1.00	2.03	4.00	3.05	7.00	7.11	10.00	3.05
1.25	2.03	4.25	7.11	7.25	5.08	10.25	2.03
1.50	2.03	4.50	6.10	7.50	5.08	10.50	1.02
1.75	1.02	4.75	6.10	7.75	6.10	10.75	2.03
2.00	2.03	5.00	6.10	8.00	5.08	11.00	2.03
2.25	4.06	5.25	11.18	8.25	4.06	11.25	2.03
2.50	3.05	5.50	11.18	8.50	3.05	11.50	1.02
2.75	4.06	5.75	80.26	8.75	4.06	11.75	2.03
3.00	3.05	6.00	81.28	9.00	3.05	12.00	2.03

CALIB		
STANDHYD (0041)	Area (ha)=	1.62
ID= 1 DT= 5.0 min	Total Imp(%)=	46.00 Dir. Conn.(%)= 46.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.75	0.87
Dep. Storage	(mm)=	1.00	1.50
Average Slope	(%)=	1.00	2.00
Length	(m)=	103.92	40.00

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     Mannings n          =      0.013        0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.
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---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.03	3.083	4.06	6.083	16.26	9.08	3.05
0.167	2.03	3.167	4.06	6.167	16.26	9.17	3.05
0.250	2.03	3.250	4.06	6.250	16.26	9.25	3.05
0.333	2.03	3.333	3.05	6.333	16.26	9.33	3.05
0.417	2.03	3.417	3.05	6.417	16.26	9.42	3.05
0.500	2.03	3.500	3.05	6.500	16.26	9.50	3.05
0.583	1.02	3.583	4.06	6.583	7.11	9.58	2.03
0.667	1.02	3.667	4.06	6.667	7.11	9.67	2.03
0.750	1.02	3.750	4.06	6.750	7.11	9.75	2.03
0.833	2.03	3.833	3.05	6.833	7.11	9.83	3.05
0.917	2.03	3.917	3.05	6.917	7.11	9.92	3.05
1.000	2.03	4.000	3.05	7.000	7.11	10.00	3.05
1.083	2.03	4.083	7.11	7.083	5.08	10.08	2.03
1.167	2.03	4.167	7.11	7.167	5.08	10.17	2.03
1.250	2.03	4.250	7.11	7.250	5.08	10.25	2.03
1.333	2.03	4.333	6.10	7.333	5.08	10.33	1.02
1.417	2.03	4.417	6.10	7.417	5.08	10.42	1.02
1.500	2.03	4.500	6.10	7.500	5.08	10.50	1.02
1.583	1.02	4.583	6.10	7.583	6.10	10.58	2.03
1.667	1.02	4.667	6.10	7.667	6.10	10.67	2.03
1.750	1.02	4.750	6.10	7.750	6.10	10.75	2.03
1.833	2.03	4.833	6.10	7.833	5.08	10.83	2.03
1.917	2.03	4.917	6.10	7.917	5.08	10.92	2.03
2.000	2.03	5.000	6.10	8.000	5.08	11.00	2.03
2.083	4.06	5.083	11.18	8.083	4.06	11.08	2.03
2.167	4.06	5.167	11.18	8.167	4.06	11.17	2.03
2.250	4.06	5.250	11.18	8.250	4.06	11.25	2.03
2.333	3.05	5.333	11.18	8.333	3.05	11.33	1.02
2.417	3.05	5.417	11.18	8.417	3.05	11.42	1.02
2.500	3.05	5.500	11.18	8.500	3.05	11.50	1.02
2.583	4.06	5.583	80.26	8.583	4.06	11.58	2.03
2.667	4.06	5.667	80.26	8.667	4.06	11.67	2.03
2.750	4.06	5.750	80.26	8.750	4.06	11.75	2.03
2.833	3.05	5.833	81.28	8.833	3.05	11.83	2.03
2.917	3.05	5.917	81.28	8.917	3.05	11.92	2.03
3.000	3.05	6.000	81.28	9.000	3.05	12.00	2.03

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     Max.Eff.Inten.(mm/hr)=      81.28        66.15
               over (min)         5.00        15.00
     Storage Coeff.  (min)=       2.84 (ii)   11.17 (ii)
     Unit Hyd. Tpeak (min)=       5.00        15.00
     Unit Hyd. peak  (cms)=       0.28         0.09
                                                      *TOTALS*
     PEAK FLOW       (cms)=       0.17         0.13          0.299 (iii)
     TIME TO PEAK    (hrs)=       6.00         6.00           6.00
     RUNOFF VOLUME    (mm)=      88.92        60.24          73.43
     TOTAL RAINFALL   (mm)=      89.92        89.92          89.92
     RUNOFF COEFFICIENT   =       0.99         0.67           0.82

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  86.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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--------------------
| RESERVOIR(  0048)|
| IN= 2---> OUT= 1 |
| DT=  5.0 min     |     OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
--------------------      (cms)     (ha.m.)   |   (cms)     (ha.m.)
                          0.0000     0.0000   |   0.0570      0.0650

                                  AREA     QPEAK     TPEAK       R.V.
                                  (ha)     (cms)     (hrs)       (mm)
     INFLOW : ID= 2 (  0041)      1.620      0.299      6.00      73.43
     OUTFLOW: ID= 1 (  0048)      1.620      0.057      6.58      73.25

                    PEAK   FLOW   REDUCTION [Qout/Qin](%)= 19.05
                    TIME SHIFT OF PEAK FLOW         (min)= 35.00
                    MAXIMUM  STORAGE   USED       (ha.m.)=  0.0650

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|    READ STORM    |    Filename: C:\Users\ygollamudi\AppD
|                  |              ata\Local\Temp\
|                  |              e88bcada-d938-48ee-986c-873dd4f72d8d\07688420
| Ptotal= 89.92 mm |    Comments: 100yr
--------------------
```

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	2.03	3.25	4.06	6.25	16.26	9.25	3.05
0.50	2.03	3.50	3.05	6.50	16.26	9.50	3.05
0.75	1.02	3.75	4.06	6.75	7.11	9.75	2.03
1.00	2.03	4.00	3.05	7.00	7.11	10.00	3.05
1.25	2.03	4.25	7.11	7.25	5.08	10.25	2.03
1.50	2.03	4.50	6.10	7.50	5.08	10.50	1.02
1.75	1.02	4.75	6.10	7.75	6.10	10.75	2.03
2.00	2.03	5.00	6.10	8.00	5.08	11.00	2.03
2.25	4.06	5.25	11.18	8.25	4.06	11.25	2.03
2.50	3.05	5.50	11.18	8.50	3.05	11.50	1.02
2.75	4.06	5.75	80.26	8.75	4.06	11.75	2.03
3.00	3.05	6.00	81.28	9.00	3.05	12.00	2.03

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| CALIB            |
| STANDHYD (  0049)|   Area    (ha)=   1.63
|ID= 1 DT= 5.0 min |   Total Imp(%)=  40.00   Dir. Conn.(%)=  40.00
--------------------
                                IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.65         0.98
     Dep. Storage     (mm)=       1.00         1.50
     Average Slope     (%)=       1.00         2.00
     Length            (m)=     104.24        40.00
     Mannings n           =      0.013        0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.
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---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.03	3.083	4.06	6.083	16.26	9.08	3.05
0.167	2.03	3.167	4.06	6.167	16.26	9.17	3.05
0.250	2.03	3.250	4.06	6.250	16.26	9.25	3.05
0.333	2.03	3.333	3.05	6.333	16.26	9.33	3.05
0.417	2.03	3.417	3.05	6.417	16.26	9.42	3.05
0.500	2.03	3.500	3.05	6.500	16.26	9.50	3.05
0.583	1.02	3.583	4.06	6.583	7.11	9.58	2.03
0.667	1.02	3.667	4.06	6.667	7.11	9.67	2.03
0.750	1.02	3.750	4.06	6.750	7.11	9.75	2.03
0.833	2.03	3.833	3.05	6.833	7.11	9.83	3.05
0.917	2.03	3.917	3.05	6.917	7.11	9.92	3.05
1.000	2.03	4.000	3.05	7.000	7.11	10.00	3.05
1.083	2.03	4.083	7.11	7.083	5.08	10.08	2.03
1.167	2.03	4.167	7.11	7.167	5.08	10.17	2.03
1.250	2.03	4.250	7.11	7.250	5.08	10.25	2.03
1.333	2.03	4.333	6.10	7.333	5.08	10.33	1.02
1.417	2.03	4.417	6.10	7.417	5.08	10.42	1.02
1.500	2.03	4.500	6.10	7.500	5.08	10.50	1.02
1.583	1.02	4.583	6.10	7.583	6.10	10.58	2.03
1.667	1.02	4.667	6.10	7.667	6.10	10.67	2.03
1.750	1.02	4.750	6.10	7.750	6.10	10.75	2.03
1.833	2.03	4.833	6.10	7.833	5.08	10.83	2.03
1.917	2.03	4.917	6.10	7.917	5.08	10.92	2.03
2.000	2.03	5.000	6.10	8.000	5.08	11.00	2.03
2.083	4.06	5.083	11.18	8.083	4.06	11.08	2.03
2.167	4.06	5.167	11.18	8.167	4.06	11.17	2.03
2.250	4.06	5.250	11.18	8.250	4.06	11.25	2.03
2.333	3.05	5.333	11.18	8.333	3.05	11.33	1.02
2.417	3.05	5.417	11.18	8.417	3.05	11.42	1.02
2.500	3.05	5.500	11.18	8.500	3.05	11.50	1.02
2.583	4.06	5.583	80.26	8.583	4.06	11.58	2.03
2.667	4.06	5.667	80.26	8.667	4.06	11.67	2.03
2.750	4.06	5.750	80.26	8.750	4.06	11.75	2.03
2.833	3.05	5.833	81.28	8.833	3.05	11.83	2.03
2.917	3.05	5.917	81.28	8.917	3.05	11.92	2.03
3.000	3.05	6.000	81.28	9.000	3.05	12.00	2.03

Max.Eff.Inten.(mm/hr)=	81.28	60.50		
over (min)	5.00	15.00		
Storage Coeff. (min)=	2.85 (ii)	11.47 (ii)		
Unit Hyd. Tpeak (min)=	5.00	15.00		
Unit Hyd. peak (cms)=	0.28	0.09		
			TOTALS	
PEAK FLOW (cms)=	0.15	0.13	0.277 (iii)	
TIME TO PEAK (hrs)=	6.00	6.08	6.00	
RUNOFF VOLUME (mm)=	88.92	54.22	68.10	
TOTAL RAINFALL (mm)=	89.92	89.92	89.92	
RUNOFF COEFFICIENT =	0.99	0.60	0.76	

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 82.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

RESERVOIR(0050) IN= 2---> OUT= 1 DT= 5.0 min	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
	0.0000	0.0000	0.0300	0.0710

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0049)	1.630	0.277	6.00	68.10
OUTFLOW: ID= 1 (0050)	1.630	0.030	7.00	67.73

PEAK FLOW REDUCTION [Qout/Qin](%)= 10.82
TIME SHIFT OF PEAK FLOW (min)= 60.00
MAXIMUM STORAGE USED (ha.m.)= 0.0709

FINISH

Appendix D
Floodplain Analysis

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FLOODPLAIN ANALYSIS REPORT

KIRBY ROAD EXTENSION
CITY OF VAUGHAN

PROJECT: 2015-4339 AUGUST 2019

Revision	Description	Prepared		Reviewed	
		By	Date	By	Date
1.	Revised Report as per TRCA comments	S.Katukurunde	August 2019	K. Shahbikian	August 2019
0.	Draft Report	S.Katukurunde	May 2019		

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CONSULTING ENGINEERS

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TABLE OF CONTENTS

LIST OF FIGURES

TABLES

LIST OF APPENDICES

1.0 Introduction

Schaeffers & Associates Ltd. (SCE) has been retained to prepare the floodplain mapping for the proposed Kirby Road extension between Dufferin Street and Bathurst Street in the City of Vaughan. Figure 1.1 presents the limit of work for the proposed Kirby Road extension. Current analysis has been done to assess the impact of the Road extension and proposed culvert on the existing tributary and determine the regulatory flood limit. Current report presents floodplain analysis results as well as a review of the hydraulic modeling parameters and approaches. Thus, in order to prepare floodplain mapping for the subject site, new model has been created in HEC-RAS using available topographic data (i.e., Detail Survey) as well as PCSWMM modelling conducted as part of the SWM report.

Phil Gotfried

RIZMI HOLDINGS

LEGEND

- EA STUDY AREA
- SUBJECT LOCATION
- KIRBY ROAD EXTENTION
- SUBJECT LANDS TO KIRBY ROAD EXTENTION
- CITY BOUNDARY LINE

DUFFERIN STREET

BATHURST STREET

CITY OF VAUGHAN

TOWN OF RICHMOND HILL

Hearthside Rd

Tower Hill Rd

Amstel Ave

Valmont Ave

Rocksprings Ave

Salt Creek Ave

Aikenhead Ave

Waymount Ave

Gamble Rd

Rebecca Ct

Woodland Acres Cr

Springer Dr

Shaftsbury Ave

Cedar Spring

Eagle Peak Dr

Owl Ridge Dr

Crossroads Dr

Collins Ct

Alpaca Dr

Gannett Dr

Athabasca Dr

Hunterwood Cha

Beakes Crescent

Koolenay Ridge

Kokanee Ct

SCHAEFFERS
CONSULTING ENGINEERS

6 Ronrose Drive, Concord, Ontario L4K 4R3
Tel: (905) 738-6100 Email: general@schaeffers.com
www.schaeffers.com

FIGURE 1.1
KIRBY ROAD EXTENSION
LOCATION PLAN

2015-4339	AUGUST 2019	SCALE: N.T.S.

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2.0 Study Area

The land surrounding the extension is located within the East Don River Watershed. Based on the topographic survey and aerial topography, the site generally slopes down in a southerly direction. Figure 2.1 presents the pre-development drainage area near the road extension. These lands are traversed by a number of swales. A provincially significant wetland is located within the road allowance with a tributary drainage area of about 55.30 ha. This drainage is conveyed by the East Patterson Creek that eventually drains south across the municipal road allowance. This watercourse has been classified as an intermittent tributary based on environmental studies.

A Hydrogeological Study and Geotechnical Report were prepared by Terraprobe as part of the Class EA Study conducted for the road extension. According to the reports, the predominant soil type on the study area is Sand/Sandy-Silt to Silty Sand.

Pavel Recnik

DUFFERIN ST

BATHURST ST

RIZMI HOLDINGS

LEGEND

- EA STUDY AREA
- SUBJECT LOCATION
- KIRBY ROAD EXTENTION
- EXISTING WETLAND
- EXISTING WATERCOURSE
- EXISTING DRAINAGE BOUNDARIES
- AREA DRAINING TO PSW AREA = 55.32ha
- DIRECTION OF EXISTIING FLOW

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FIGURE 2.1
PRE-DEVELOPMENT
DRAINAGE CONDITIONS

2015-4339	AUGUST 2019	SCALE: N.T.S.

W:\4300's\4339 - Kirby Rd EA\Drawings\Drainage\2019-08-07-4339-Drainage.dwg

3.0 Proposed Conditions

It is proposed to keep the existing drainage patterns similar to the pre-development conditions with the construction of the road extension. Based on the recommended alignment, it is proposed to incorporate a 6.10 m x 2.74 m Culvert to drain the water across the proposed road. The culvert has been upsized to satisfy animal crossing requirements.

Pavel Recnik

DUFFERIN ST

BATHURST ST

301E
7.42ha

302E
57.77ha

303E
11.88ha

304E
13.93ha

305E
72.56ha

306E
30.36ha

RIZMI HOLDINGS

LEGEND

- EA STUDY AREA
- SUBJECT LOCATION
- KIRBY ROAD EXTENTION
- EXISTING WETLAND
- EXISTING WATERCOURSE
- PROPOSED DRAINAGE BOUNDARIES
- AREA DRAINING TO PSW AREA = 55.38ha
- PROPOSED DRAINAGE AREA ALONG PROPOSED KIRBY ROAD
- 306E / 30.36ha — DRAINAGE AREA ID / DRAINAGE AREA IN HECTARES
- PROPOSED CULVERT
- PROPOSED STORM SEWER
- PRELIMINARY OUTLET LOCATION

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FIGURE 3.1
POST-DEVELOPMENT
DRAINAGE CONDITIONS

2015-4339	AUGUST 2019	SCALE: N.T.S.

W:\4300\s\4339 - Kirby Rd EA\Drawings\Drainage\2019-08-07-4339-Drainage.dwg

4.0 Methodology of HEC-RAS Modeling and Floodplain Analysis

Hydraulic model for the subject site has been created in HEC-RAS to analyse high water surface profile elevations and generate floodplains. Alignment of the existing watercourses upstream of Kirby Road extension has been considered in the model. Furthermore, geometric information; including detail survey and aerial topographic data have been used in the modelling process.

General modeling procedure and development of the hydraulic model can be summarized as follows:

- Determine georeferenced alignment of the reach (NAD83/UTM zone 17N);
- Generate surface terrain layer based on the elevation data source;
- Determine cross-section locations considering the hydraulic characteristics of the study area and HEC-RAS Hydraulic Reference Manual criteria;
- Generate geo-referenced cross-sections using digital terrain layer along a watercourse reach;
- Add hydraulic structures data to the model;
- Determine key model parameters (e.g., Loss Coefficients and Manning's 'n' values, Flow lengths and Ineffective Flow Areas);
- Add simulated storm flows data to the model;
- Determine boundary conditions for hydraulic modelling;
- Conduct Steady Flow analysis and Water Surface Profile calculation; and
- Generate required floodplains for the most conservative storm.

In this study, the available detailed topographic field data and Aerial topographic data (where the detailed survey was not available) were used to produce a high-resolution Triangulated Irregular Network (TIN) for generating digital terrain layers.

5.0 Hydraulic Model

5.1 Cross-Sections

Cross-sections are coded left to right looking downstream and alignment of the cross-sections are considered perpendicular to the flow direction and are extended to contain the entire floodplain. Overbank flow lengths were also estimated considering Flow Mass centerlines.

Manning's 'n' values at cross-sections for the main channel as well as for the left and the right overbanks were coded according to TRCA requirements and HEC-RAS Hydraulic Reference Manual. The following table presents the 'n' values which were considered for each cross-section.

Table 1 HEC-RAS Model Manning's n values

Cross-Section	Manning's n Values			Comments
	Left	Channel	Right	
2025	0.1	0.05	0.1	0.04/0.08 for main channel 0.04/0.10 for Left overbank 0.04/0.10 for Right overbank
2000	0.1	0.05	0.1	
1975	0.1	0.05	0.1	
1950	0.1	0.05	0.1	
1925	0.1	0.05	0.1	
1900	0.1	0.04	0.04	
1875	0.04	0.04	0.04	
1850	0.04	0.04	0.04	
1825	0.04	0.04	0.1	
1800	0.04	0.04	0.1	
1775	0.04	0.04	0.1	
1750	0.04	0.04	0.1	
1725	0.05	0.04	0.04	
1700	0.04	0.04	0.1	
1675	0.1	0.05	0.1	
1650	0.1	0.05	0.1	
1625	0.1	0.05	0.1	
1600	0.1	0.05	0.1	

1575	0.1	0.05	0.1
1550	0.1	0.05	0.1
1525	0.1	0.05	0.1
1500	0.1	0.05	0.04
1468.66	0.1	0.05	0.04
1440.57	0.1	0.05	0.04
1400	0.1	0.05	0.04
1380.5	0.04	0.035	0.04
1366.3	0.1	0.035	0.04
1350	0.1	0.035	0.04
1325	0.1	0.035	0.04
1300	0.1	0.05	0.1
1275	0.1	0.05	0.04
1250	0.1	0.05	0.1
1225	0.1	0.05	0.1
1202.5	0.1	0.1	0.1
1200	0.1	0.1	0.1
1175	0.1	0.1	0.1
1150	0.1	0.1	0.1
1125	0.1	0.1	0.1
1100	0.1	0.1	0.1
1075	0.1	0.1	0.1
1050	0.1	0.1	0.1
1025	0.1	0.1	0.1
1000	0.1	0.08	0.1

It should be noted that, in the current model, where changes in river cross-sections are small and the flow is subcritical (HEC-RAS Hydraulic Reference Manual, Table 3.3), Contraction and Expansion Coefficients were set to 0.1 and 0.3 respectively for gradual transitions. The Contraction and Expansion Coefficients of 0.6 and 0.8 respectively, have been applied at the box culvert boundary cross-sections since there are abrupt transitions. As a conservative measure contraction and expansion coefficients of 0.6 and 0.8 have been used throughout the model where there are abrupt transitions. Furthermore, there is an existing culvert between 1366.30 and 1380.50 under the pathway, approximately 50 m downstream of the proposed watercourse crossing. This culvert was not incorporated in the model as it is a minor culvert that overtops

during major storm events.

5.2 Boundary Conditions

According to the HEC-RAS modeling recommendations, the boundary conditions of the new hydraulic model would be the relevant water surface elevation from the downstream existing model. Due to the lack of an available model for the downstream end of the modelled reach, the computed normal depth was set as the boundary condition for the upstream and downstream cross-sections.

5.3 Hydraulic Structures

The post-development model includes a Con-Span Short span series 6.1 m x 2.74 m culvert placed a slope of about 1.0 % to convey flows across the proposed road. In addition, locations of the controlling cross-sections at the culvert points were determined according to the HEC-RAS Hydraulic Reference Manual recommendations. As mentioned before, for the boundary cross-sections of the culvert, values of 0.6 and 0.8 for Contraction and Expansion Coefficients respectively were considered in the HEC-RAS model. In order to define Ineffective Flow Areas at the boundary cross-sections of the culverts, the Expansion Reach upstream of the culvert was calculated based on 2:1 expansion rate. The Expansion Reach downstream of the culvert was calculated considering 2:1 expansion rate. The elevation of Ineffective Flow areas at road crossings were set to lowest elevation of the high chord of the subject crossing. It is to note that the proposed road has been modeled given its preliminary proposed grades.

5.4 Hydrologic Data

A PCSWMM Model has been developed as part of the SWM Study for the proposed Kirby Road extension. Based on the Hydrology model presented in the revised SWM report, an area of 112.30 ha drains across the proposed Kirby Road extension in existing conditions. This is set to increase up to 120.63 ha in proposed conditions. Based on the PCSWMM Model, the 100 year flow is calculated to be the governing flow. It is also important to note that the reach has been modeled with two separate flows. Cross-sections 2025 to 1440.57 has been modeled with flows from upstream of the road extension, and cross-sections 1400 to 1300 with the total flow draining to the south. **Table 2** below presents a summary of flows.

Table 2 Humber River Hydrology Existing Model Peak Flow

HEC RAS Cross Sections	Flows (m^3/s)	
	Regional (Hazel)	100 – year 12 Hour SCS
2025-1440.57	10.22	13.87
1440-1300	13.98	21.00

Table 3 Humber River Hydrology Post-Development Model Peak Flow

HEC RAS Cross Sections	Flows (m^3/s)	
	Regional (Hazel)	100 – year 12 Hour SCS
2025-1440.57	10.22	13.87
1440-1300	16.21	26.58

6.0 Hydraulic Modeling and Floodplain Analysis Results

Steady Flow Analysis in HEC-RAS model has been done to perform hydraulic modeling of the road extension under existing and proposed conditions. As described in section 5, hydraulic modeling has been done for the Regional (Hurricane Hazel, Last 12 hours distribution) storm, and the 100 year storm (12 Hour SCS distribution) events. The complete HEC-RAS outputs have been provided in Appendix C and digital copy of HEC-RAS model has been provided in Appendix D.

6.1 Water Surface Elevation

Steady Flow Analysis in HEC-RAS has been used to perform hydraulic modeling of the subject development under future condition. Hydraulic analysis was done and water surface elevations were calculated for the 100 year storm event. Table 4 and Table 5 provide summaries for the existing and proposed conditions modeling results of the water surface elevations under future peak flow condition. In addition, summary of the HEC-RAS modeling results is presented in Appendix C. The Floodplain Mapping drawings are also provided in Appendix B. The governing 100 year storm water surface elevations are presented in the flood mapping drawing.

Table 4: Summary of HEC-RAS Modeling Results for Existing Conditions

Cross Section Station	Min Channel Elevation	High Water Surface Elevation		Regulatory Flood Elevation
		Regional (Hazel)	100 year SCS Storm Distribution*	
	(m)	(m)	(m)	(m)
2025	293.7	294.05	294.09	294.09
2000	291.88	292.24	292.28	292.28
1975	289.92	290.36	290.43	290.43
1950	288.64	288.97	289.03	289.03
1925	287.1	287.75	287.82	287.82
1900	286.92	287.28	287.32	287.32
1875	286.14	286.47	286.52	286.52
1850	285.54	285.81	285.85	285.85
1825	284.63	284.95	284.97	284.97
1800	284.1	284.53	284.59	284.59
1775	283.81	284.14	284.18	284.18
1750	282.87	283.22	283.27	283.27
1725	282.12	282.49	282.55	282.55
1700	281.56	282.06	282.14	282.14
1675	281.14	281.78	281.85	281.85
1650	280.98	281.48	281.54	281.54
1625	280.41	280.79	280.85	280.85
1600	278.99	279.57	279.65	279.65
1575	278.97	279.51	279.58	279.58
1550	278.94	279.22	279.38	279.38
1525	278	279.12	279.38	279.38
1500	277.35	279.11	279.37	279.37
1468.66	277.27	278.66	278.83	278.83
1440.57	276.29	278.02	278.3	278.3
1400	274.93	276.47	276.73	276.73
1380.5	274.59	275.86	276.02	276.02
1366.3	273.98	275.64	275.95	275.95
1350	273.58	275.13	275.53	275.53
1325	272.85	274.18	274.34	274.34
1300	272.48	273.89	274.24	274.24

Cross Section Station	Min Channel Elevation	High Water Surface Elevation		Regulatory Flood Elevation
		Regional (Hazel)	100 year SCS Storm Distribution*	
	(m)	(m)	(m)	(m)
1275	271.99	273.27	273.27	273.27
1250	271.93	272.17	272.41	272.41
1225	270	272.18	272.42	272.42
1202.5	270.95	272.14	272.37	272.37
1200	270.78	272.1	272.32	272.32
1175	269.96	270.78	271.06	271.06
1150	269	270.22	270.41	270.41
1125	269	270	270.17	270.17
1100	268.98	269.4	269.54	269.54
1075	266.93	268.15	268.35	268.35
1050	265.93	266.53	266.68	266.68
1025	264.88	265.86	266.04	266.04
1000	264.78	265.4	265.53	265.53

Table 5: Summary of HEC-RAS Modeling Results for Post-Development Conditions

Cross Section Station	Min Channel Elevation	High Water Surface Elevation		Regulatory Flood Elevation
		Regional (Hazel)	100 year SCS Storm Distribution*	
	(m)	(m)	(m)	(m)
2025	293.7	294.05	294.09	294.09
2000	291.88	292.24	292.28	292.28
1975	289.92	290.36	290.43	290.43
1950	288.64	288.97	289.03	289.03
1925	287.1	287.75	287.82	287.82
1900	286.92	287.28	287.32	287.32
1875	286.14	286.47	286.52	286.52
1850	285.54	285.81	285.85	285.85
1825	284.63	284.95	284.97	284.97
1800	284.1	284.53	284.59	284.59
1775	283.81	284.14	284.18	284.18
1750	282.87	283.22	283.27	283.27
1725	282.12	282.49	282.55	282.55
1700	281.56	282.06	282.14	282.14
1675	281.14	281.78	281.85	281.85
1650	280.98	281.48	281.54	281.54
1625	280.41	280.79	280.85	280.85
1600	278.99	279.57	279.65	279.65
1575	278.97	279.51	279.58	279.58
1550	278.94	279.22	279.38	279.38
1525	278	279.14	279.38	279.38
1500	277.35	279.13	279.37	279.37
1468.66	277.27	278.82	279.01	279.01
1440.57	276.29	277.79	277.98	277.98
1425	Culvert			
1400	274.93	276.54	276.93	276.93
1380.5	274.59	275.99	276.08	276.08
1366.3	273.98	275.76	276.05	276.05
1350	273.58	275.24	275.70	275.70
1325	272.85	274.27	274.39	274.39

Cross Section Station	Min Channel Elevation	High Water Surface Elevation		Regulatory Flood Elevation
		Regional (Hazel)	100 year SCS Storm Distribution*	
	(m)	(m)	(m)	(m)
1300	272.48	273.99	274.41	274.41
1275	271.99	273.28	273.41	273.41
1250	271.93	272.24	272.56	272.56
1225	270	272.24	272.57	272.57
1200	270.78	272.21	272.52	272.52
1175	269.96	270.87	271.23	271.23
1150	269	270.28	270.54	270.54
1125	269	270.06	270.28	270.28
1100	268.98	269.45	269.65	269.65
1075	266.93	268.22	268.48	268.48
1050	265.93	266.58	266.78	266.78
1025	264.98	265.97	266.21	266.21
1000	264.78	265.51	265.71	265.71

As can evident by the results, the difference in water surface elevation from post-development conditions to the existing conditions in majority of the cross-sections are negligible. As per the model, the water surface elevation at the entrance of the culvert is 277.98 m as such no over topping is expected.

7.0 Summary and Conclusion

This report presents hydraulic modeling and calculated Water Surface Elevations and associated floodplain mapping for the proposed Kirby Road extension within the City of Vaughan. The results of the hydraulic modeling and floodplain mapping can be summarized as follows:

- The subject area falls under jurisdiction of the TRCA and Hydraulic Modelling was performed using HEC-RAS software;

- Topographic data from the detailed topographic survey and Aerial topographic data (where the detailed survey was not available) were used to generate digital terrain layers for hydraulic modeling and floodplain mapping;

- New hydraulic model has been created in HEC-RAS based on the available geometric data;

- Regional (Hurricane Hazel) storm event and the 100 year storm event were simulated based on the PCSWMM model for the surrounding lands created as part of the SWM Study by Schaeffer and Associates Ltd;

- The flood line for the 100 year storm event was determined to be the regulatory flood line and was developed based on the calculated Water Surface Elevations and the terrain elevation layer;

- According to the obtained results, the proposed 6.10 m x 2.74 m culvert can sufficiently convey the 100 year flow event without overtopping;

We trust that you will find this analysis satisfactory. If you have any questions or comments with respect to hydraulic analysis, please do not hesitate to contact us.

Respectfully Submitted,

SCHAEFFER & ASSOCIATES LTD.

LICENSED PROFESSIONAL ENGINEER
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PROVINCE OF ONTARIO

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Water Resources Analyst

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Partner

APPENDIX A: PCSWMM Outputs

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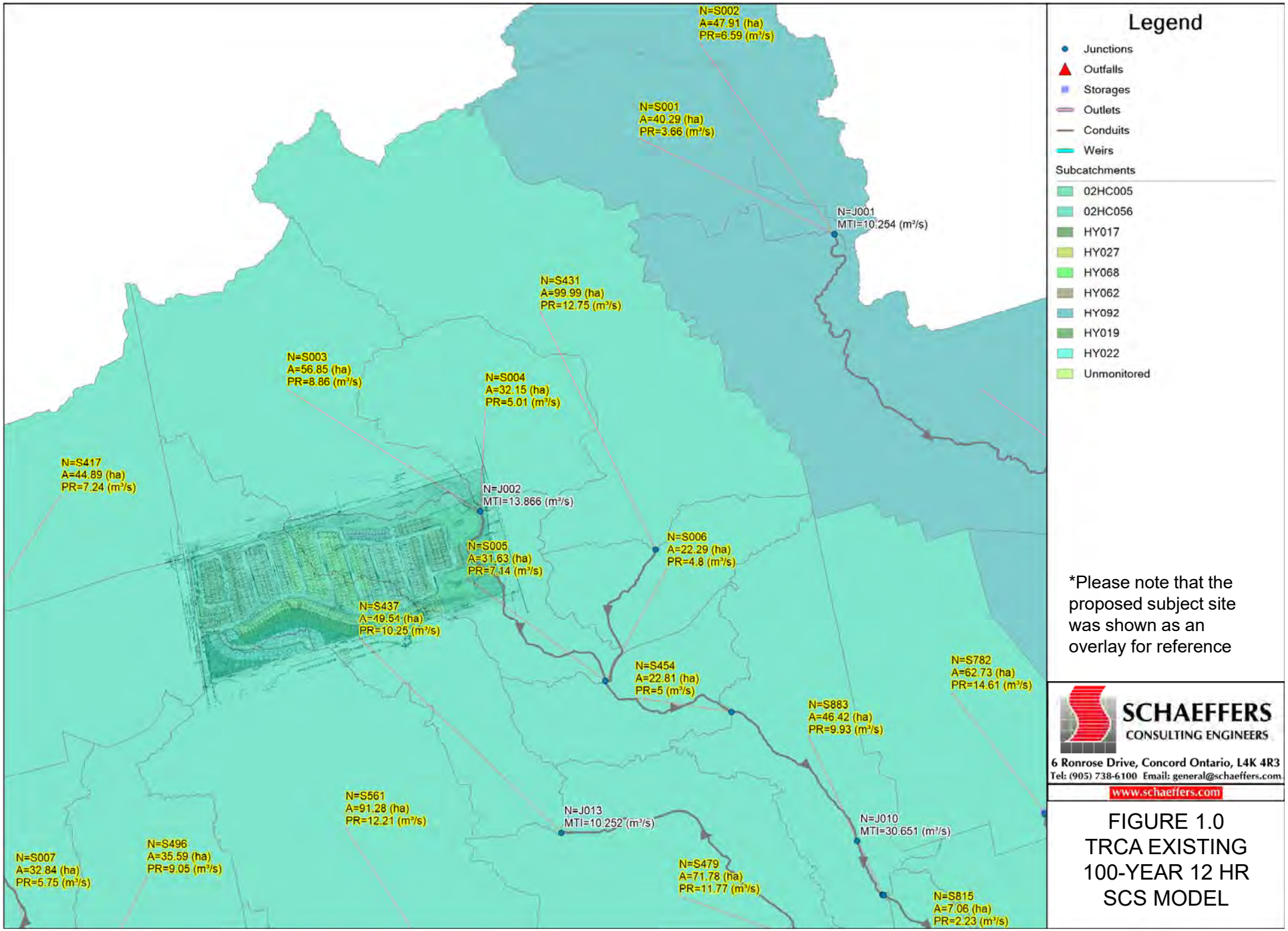

*Please note that the proposed subject site was shown as an overlay for reference

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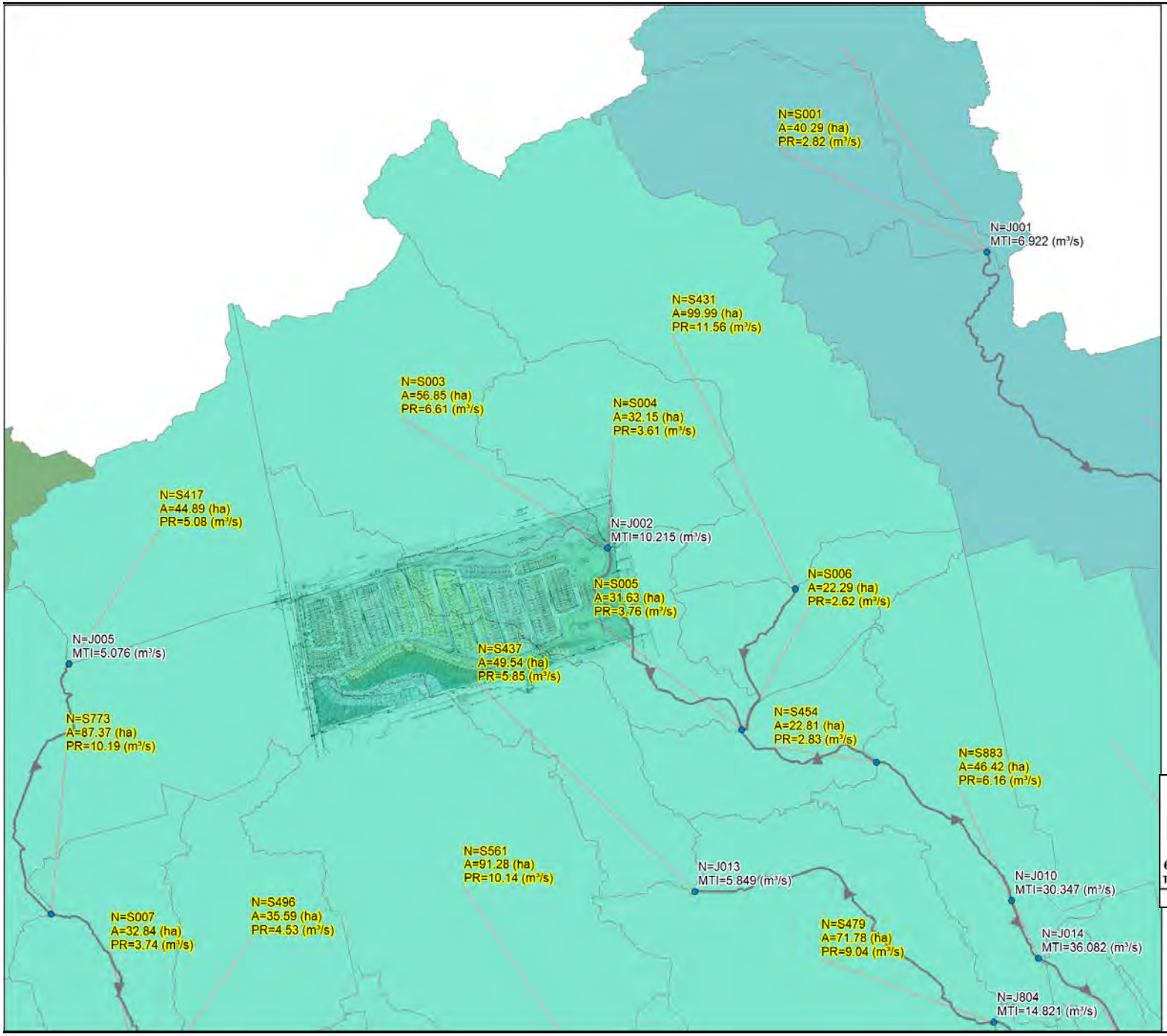
FIGURE 1.0
TRCA EXISTING
100-YEAR 12 HR
SCS MODEL



*Please note that the proposed subject site was shown as an overlay for reference

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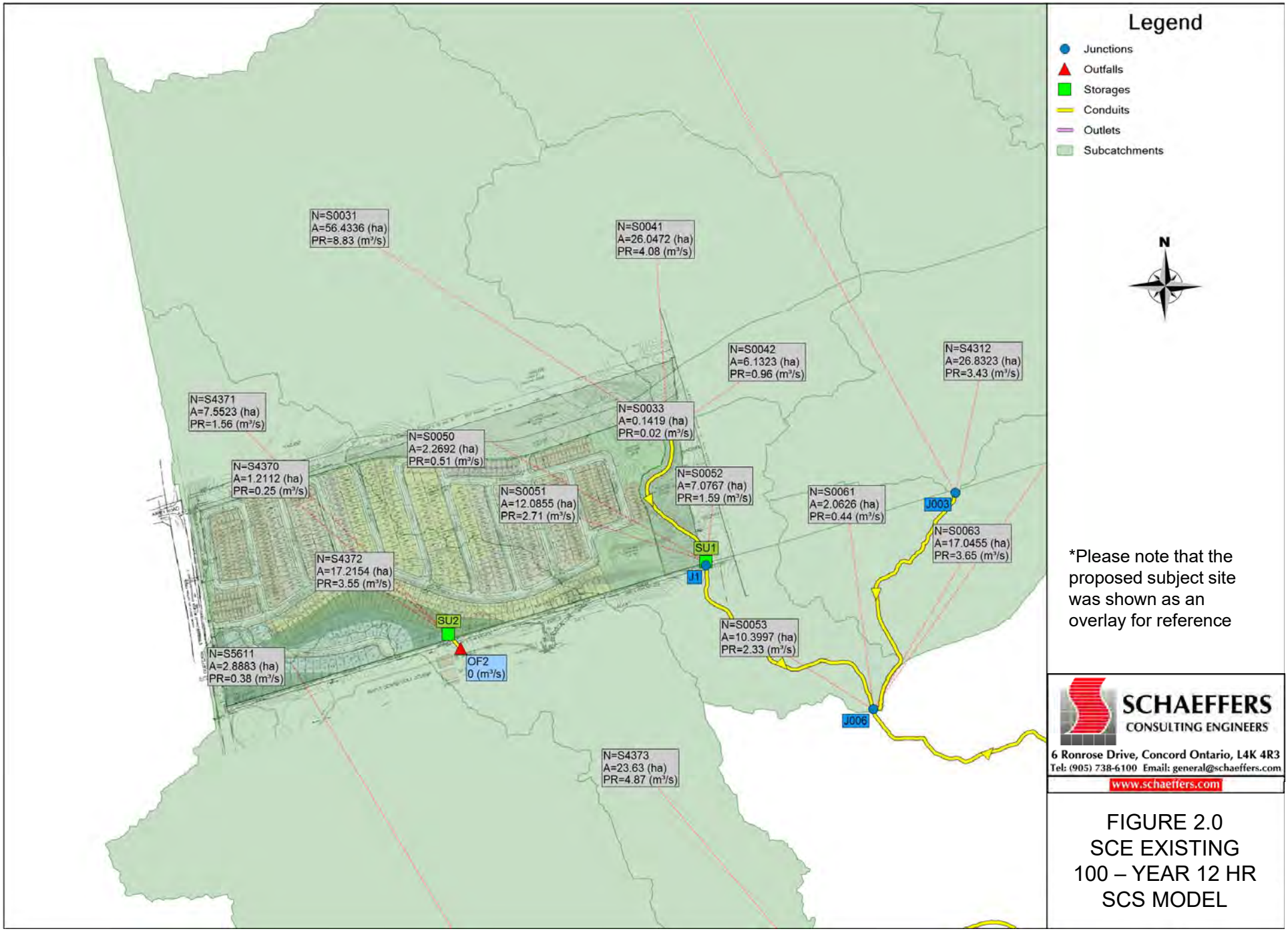
FIGURE 2.0
TRCA EXISTING
REGIONAL MODEL



*Please note that the proposed subject site was shown as an overlay for reference

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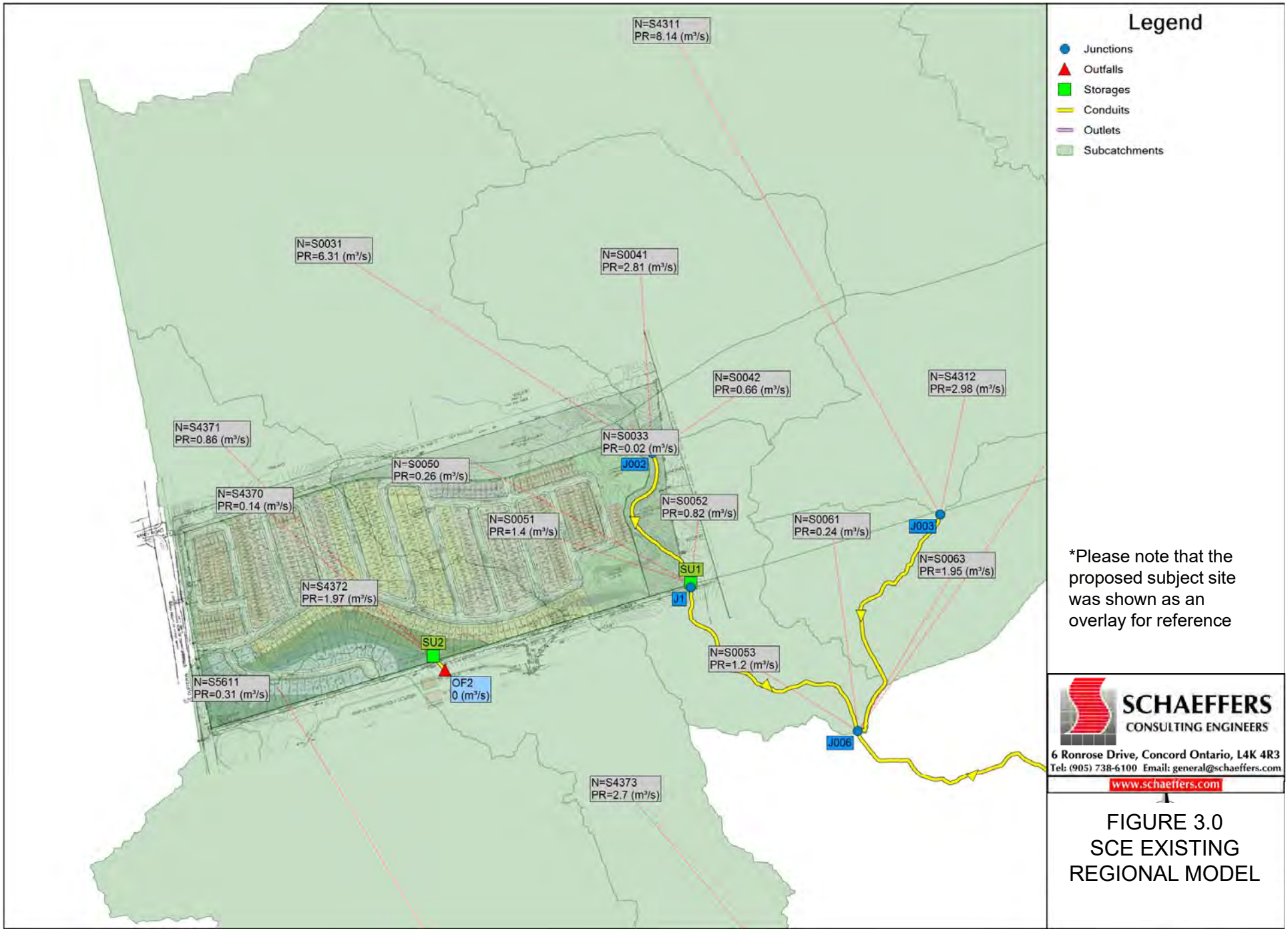
FIGURE 2.0
SCE EXISTING
100 – YEAR 12 HR
SCS MODEL



*Please note that the proposed subject site was shown as an overlay for reference

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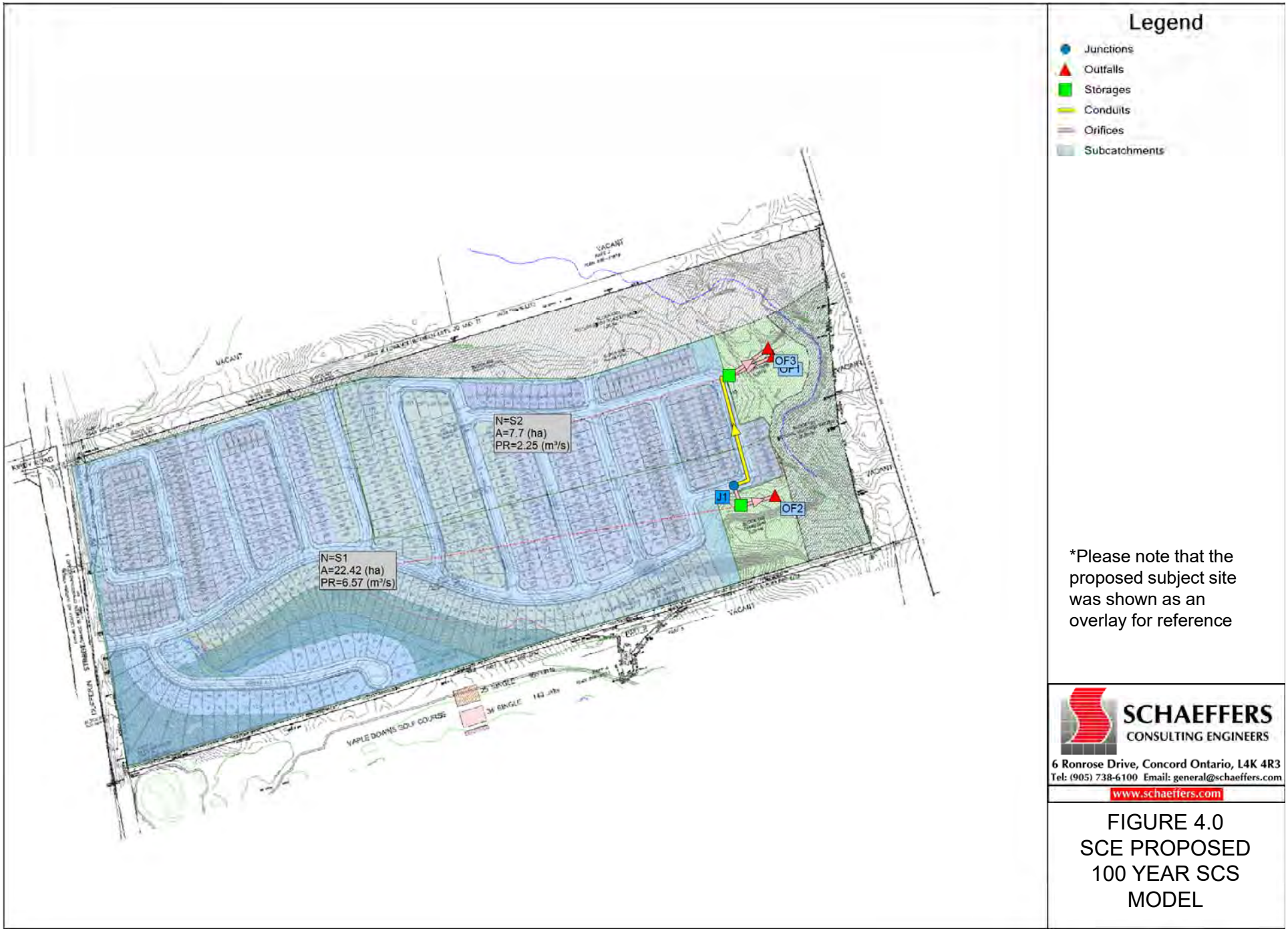
FIGURE 3.0
SCE EXISTING
REGIONAL MODEL



*Please note that the proposed subject site was shown as an overlay for reference

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FIGURE 4.0
SCE PROPOSED
100 YEAR SCS
MODEL

Legend

- Junctions
- Outfalls
- Storages
- Conduits
- Orifices
- Subcatchments

*Please note that the proposed subject site was shown as an overlay for reference

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FIGURE 4.0
SCE PROPOSED
REGIONAL MODEL

APPENDIX B: Floodplain Mapping Drawings

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294.09 2025
292.28 2000
290.43 1975
289.03 1950
287.28 1925
287.32 1900
286.52 1875
285.85 1850
282.14 1700
281.85 1675
281.54 1650
280.85 1625
279.65 1600
279.58 1575
279.38 1550
279.38 1525
279.37 1500
278.83 1468.66
278.30 1440.57
276.73 1400
276.02 1380.5
275.95 1386.3
275.53 1350
274.34 1325
274.24 1300
273.27 1275
272.41 1250
272.42 1225
272.32 1200
269.54 1100
271.06 1175
268.35 1075
270.41 1150
266.04 1025
265.53 1000
1825 284.97
1800 284.59
1775 284.18
1750 283.27
1725 282.55
1125 270.17
1050 266.68

REVISIONS

NO.	DESCRIPTION	BY	DATE

LEGEND
Cross-Section Label
Cross-Section Leader Line
100 Year Flood Elevation (m)
Cross-Section Number
19.8600
235.96
Cross-Section Length
REGULATORY FLOOD ELEVATION IS THE HIGHER OF THE TWO ELEVATIONS DISPLAYED

LEGEND

Contour, Index
Intermediate
Supplementary
Approximate
Depression
Spot Elevation, Water Level
River, Stream, Canal
Approximate Alignment
Disappearing
Split
Lake
Flooded Land
Marsh, Swamp
Ditch, Drain
Rapids
Reservoir
Falls
Building, Garage, Shed
Under Construction, Foundation
Ruins
Road, Hard Surface, with Median
Driveway, or Loose Surface
Farm Lane, Cart Track, Wagon Road
Footpath, Trail
Bridge, Footbridge
Fence
Cliff, Cut and Fill
Culvert
Dam, Beaver Dam
Pipeline
Airport Runway
Power Transmission Line, with Poles, with Pylons
Railway
Wooded Area
Chimney
Hedge
Wall
100 Year Flood Line

This map was compiled photogrammetrically from 1/10 000 aerial photography exposed in April 1977.

The vertical datum is mean sea level as established by the Geodetic Survey of Canada.

North American Datum 1927, U.T.M. 6° projection Zone 17, Central Meridian 81° W.

Transformed to North American Datum 1983 Zone 17, Central Meridian 81° W. in 2007

Grid Interval 100 metres.

PLEASE NOTE:
FLOODLINE ELEVATIONS ARE SUBJECT TO CHANGE DUE TO REVISED INFORMATION.

SCHAEFFERS
CONSULTING ENGINEERS

PLEASE NOTE:
THE PROFESSIONAL ENGINEER'S STAMP VERIFIES THE FLOOD LINE AND ASSOCIATED DATA NOT THE MAP DATA UNLESS OTHERWISE NOTED

FLOOD PLAIN MAPPING PROGRAM

FLOODLINE APPROVED DATE:

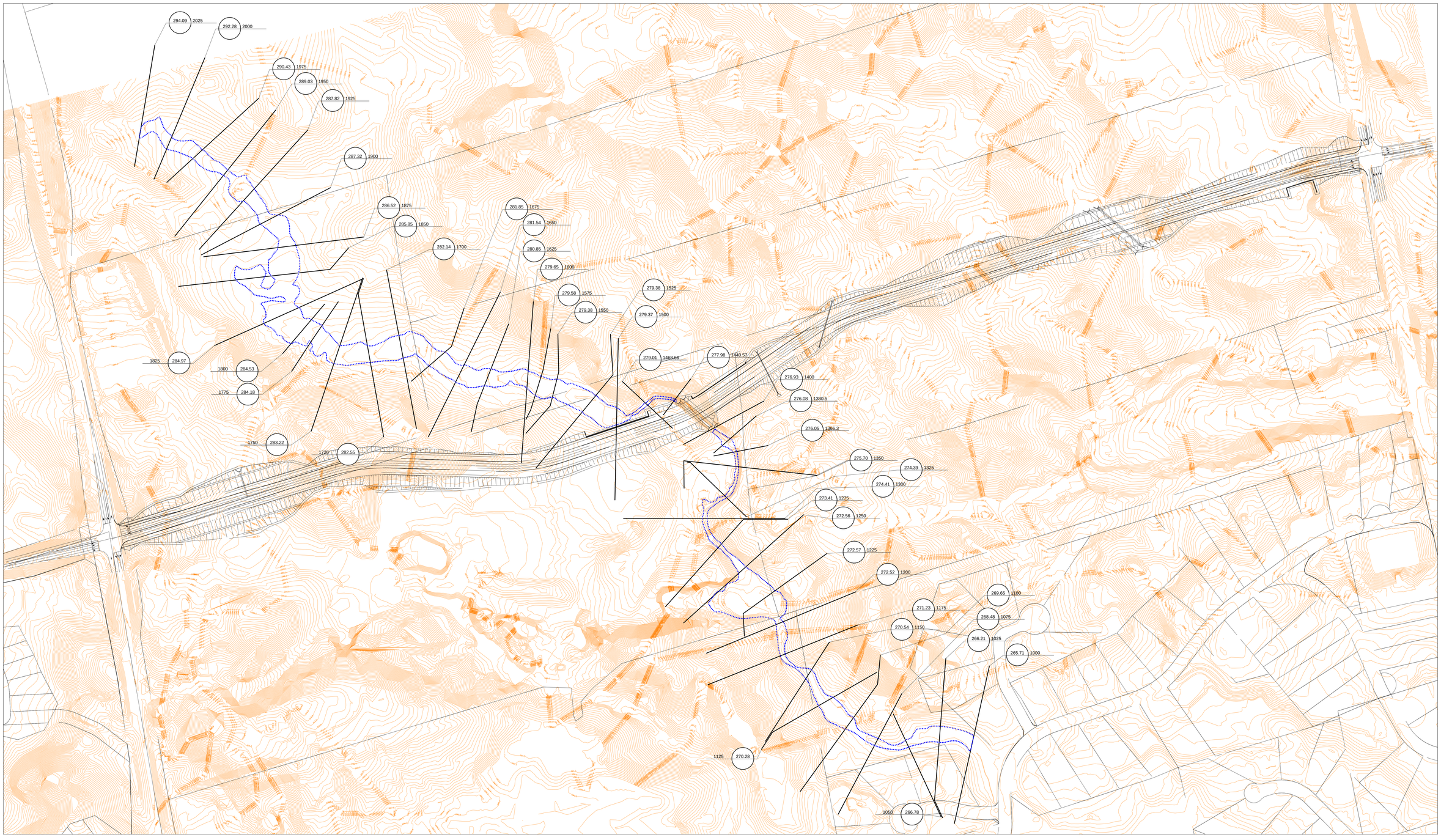
TORONTO AND REGION Conservation
for The Living City
5 Shoreham Drive Downsview Ontario M3N 1S4 (416) 661-6600

Scale 1:2000
Metres 100 0 100 200 Metres
Feet 200 0 200 400 600 800 1000 Feet
CONTOUR INTERVAL 1.0 METRES

EXISTING FLOODLINE

HUMBER RIVER

SHEET No. EX-1



REVISIONS

NO.	DESCRIPTION	BY	DATE

LEGEND
Cross-Section Label
Cross-Section Leader Line
100 Year Flood Elevation (m)
Cross-Section Number
19.8600
235.96
Cross-Section Length

REGULATORY FLOOD ELEVATION
IS THE HIGHER OF THE TWO
ELEVATIONS DISPLAYED

LEGEND

Contour, Index
Intermediate
Supplementary
Approximate
Depression
Spot Elevation, Water Level
River, Stream, Canal
Approximate Alignment
Disappearing
Split
Lake
Flooded Land
Marsh, Swamp
Ditch, Drain
Rapids
Reservoir
Falls
Building, Garage, Shed
Under Construction, Foundation
Ruins
Road, Hard Surface, with Median
Driveway, or Loose Surface
Farm Lane, Cart Track, Wagon Road
Footpath, Trail
Bridge, Footbridge
Fence
Cliff, Cut and Fill
Culvert
Dam, Beaver Dam
Pipeline
Airport Runway
Power Transmission Line, with Poles, with Pylons
Railway
Wooded Area
Chimney
Hedge
Wall
100 Year Flood Line

This map was compiled photogrammetrically from 1:10 000 aerial photography exposed in April 1977.

The vertical datum is mean sea level as established by the Geodetic Survey of Canada.

North American Datum 1927, U.T.M. 6° projection Zone 17, Central Meridian 81° W.

Transformed to North American Datum 1983 Zone 17, Central Meridian 81° W. in 2007

Grid Interval 100 metres.

PLEASE NOTE:
FLOODLINE ELEVATIONS ARE SUBJECT TO CHANGE DUE TO REVISED INFORMATION.

SCHAEFFERS
CONSULTING ENGINEERS

PLEASE NOTE:
THE PROFESSIONAL ENGINEER'S STAMP VERIFIES THE FLOOD LINE AND ASSOCIATED DATA NOT THE MAP DATA UNLESS OTHERWISE NOTED

FLOOD PLAIN MAPPING PROGRAM

FLOODLINE APPROVED DATE:

TORONTO AND REGION Conservation
for The Living City
5 Shoreham Drive Downsview Ontario M3N 1S4 (416) 661-6600

Scale 1:2000
Metres 100 0 100 200 Metres
Feet 200 0 200 400 600 800 1000 Feet

CONTOUR INTERVAL 1.0 METRES:

PROPOSED FLOODLINE

HUMBER RIVER

SHEET No. PROP-1

APPENDIX C: HEC-RAS Model Results

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Existing Conditions

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for 2-sided printing purposes

HEC-RAS Plan: Default Scenario River: East Patterson \ Reach: EASTPATT1

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)	
EASTPATT1	2025	Regional	10.22	293.70	294.05	294.02	294.13	0.027048	1.25	8.46	40.17	0.82
EASTPATT1	2025	100 Year	13.87	293.70	294.09	294.07	294.19	0.029172	1.43	10.16	41.69	0.88
EASTPATT1	2000	Regional	10.22	291.88	292.24	292.24	292.33	0.046867	1.36	7.53	42.90	1.03
EASTPATT1	2000	100 Year	13.87	291.88	292.28	292.28	292.39	0.043181	1.45	9.62	50.73	1.02
EASTPATT1	1975	Regional	10.22	289.92	290.36	290.28	290.43	0.017932	1.19	8.60	29.06	0.70
EASTPATT1	1975	100 Year	13.87	289.92	290.43	290.35	290.51	0.018849	1.31	10.55	31.83	0.73
EASTPATT1	1950	Regional	10.22	288.64	288.97	288.97	289.08	0.041335	1.46	6.98	32.29	1.01
EASTPATT1	1950	100 Year	13.87	288.64	289.03	289.03	289.15	0.039341	1.57	8.86	35.69	1.00
EASTPATT1	1925	Regional	10.22	287.10	287.75	287.53	287.78	0.006122	0.81	12.59	33.66	0.42
EASTPATT1	1925	100 Year	13.87	287.10	287.82	287.60	287.87	0.006903	0.90	15.42	38.66	0.45
EASTPATT1	1900	Regional	10.22	286.92	287.28	287.24	287.35	0.012038	1.26	9.87	54.37	0.72
EASTPATT1	1900	100 Year	13.87	286.92	287.32	287.30	287.40	0.012881	1.43	12.57	69.76	0.76
EASTPATT1	1875	Regional	10.22	286.14	286.47	286.47	286.56	0.023345	1.41	7.55	40.36	0.95
EASTPATT1	1875	100 Year	13.87	286.14	286.52	286.52	286.63	0.021649	1.52	9.68	45.35	0.94
EASTPATT1	1850	Regional	10.22	285.54	285.81	285.75	285.83	0.007855	0.67	15.83	101.04	0.52
EASTPATT1	1850	100 Year	13.87	285.54	285.85	285.78	285.87	0.006839	0.72	19.95	102.99	0.51
EASTPATT1	1825	Regional	10.22	284.63	284.95	284.95	285.01	0.016996	1.20	11.09	70.03	0.81
EASTPATT1	1825	100 Year	13.87	284.63	284.97	284.97	285.06	0.021063	1.43	12.74	71.62	0.92
EASTPATT1	1800	Regional	10.22	284.10	284.53	284.43	284.56	0.005464	0.91	14.21	54.73	0.49
EASTPATT1	1800	100 Year	13.87	284.10	284.59	284.47	284.63	0.005313	1.00	17.71	57.34	0.50
EASTPATT1	1775	Regional	10.22	283.81	284.14	284.14	284.24	0.022109	1.45	8.25	44.21	0.94
EASTPATT1	1775	100 Year	13.87	283.81	284.18	284.18	284.31	0.021867	1.62	10.31	45.85	0.96
EASTPATT1	1750	Regional	10.22	282.87	283.22	283.12	283.25	0.007193	0.88	11.61	43.40	0.54
EASTPATT1	1750	100 Year	13.87	282.87	283.27	283.16	283.32	0.007554	0.99	13.99	45.37	0.57
EASTPATT1	1725	Regional	10.22	282.12	282.49	282.49	282.60	0.028186	1.46	6.98	33.86	1.03
EASTPATT1	1725	100 Year	13.87	282.12	282.55	282.55	282.67	0.024874	1.55	8.97	36.55	1.00
EASTPATT1	1700	Regional	10.22	281.56	282.06	281.86	282.09	0.002747	0.69	15.04	42.37	0.36
EASTPATT1	1700	100 Year	13.87	281.56	282.14	281.91	282.17	0.002655	0.77	18.51	44.65	0.36
EASTPATT1	1675	Regional	10.22	281.14	281.78		281.81	0.008305	0.87	11.74	35.51	0.48
EASTPATT1	1675	100 Year	13.87	281.14	281.85		281.90	0.008435	0.94	14.72	41.60	0.50
EASTPATT1	1650	Regional	10.22	280.98	281.48		281.51	0.006290	0.79	13.26	42.70	0.43
EASTPATT1	1650	100 Year	13.87	280.98	281.54		281.58	0.006538	0.90	16.11	45.69	0.45
EASTPATT1	1625	Regional	10.22	280.41	280.79	280.79	280.90	0.042857	1.43	7.17	35.44	1.01
EASTPATT1	1625	100 Year	13.87	280.41	280.85	280.85	280.96	0.041165	1.52	9.13	39.82	1.01
EASTPATT1	1600	Regional	10.22	278.99	279.57	279.31	279.60	0.004190	0.73	14.03	33.21	0.36
EASTPATT1	1600	100 Year	13.87	278.99	279.65	279.37	279.69	0.004667	0.83	16.79	35.69	0.38
EASTPATT1	1575	Regional	10.22	278.97	279.51		279.53	0.002919	0.63	16.14	35.96	0.30
EASTPATT1	1575	100 Year	13.87	278.97	279.58		279.61	0.003451	0.74	18.73	37.34	0.33
EASTPATT1	1550	Regional	10.22	278.94	279.22	279.22	279.33	0.040263	1.48	6.90	30.80	1.00
EASTPATT1	1550	100 Year	13.87	278.94	279.38		279.45	0.013798	1.16	11.98	34.60	0.63
EASTPATT1	1525	Regional	10.22	278.00	279.12	278.41	279.12	0.000310	0.30	34.91	48.22	0.11
EASTPATT1	1525	100 Year	13.87	278.00	279.38		279.38	0.000218	0.31	48.21	53.21	0.10
EASTPATT1	1500	Regional	10.22	277.35	279.11		279.11	0.000136	0.30	37.20	31.58	0.08
EASTPATT1	1500	100 Year	13.87	277.35	279.37		279.37	0.000140	0.34	45.71	33.43	0.08
EASTPATT1	1468.66	Regional	10.22	277.27	278.66	278.55	278.93	0.017742	2.33	4.60	6.50	0.79
EASTPATT1	1468.66	100 Year	13.87	277.27	278.83	278.73	279.16	0.016936	2.57	5.88	7.77	0.80
EASTPATT1	1440.57	Regional	10.22	276.29	278.02		278.24	0.011287	2.16	5.23	6.26	0.63
EASTPATT1	1440.57	100 Year	13.87	276.29	278.30		278.52	0.009049	2.23	7.12	7.31	0.59
EASTPATT1	1400	Regional	13.98	274.93	276.47	276.43	276.86	0.028450	2.77	5.04	5.93	0.96
EASTPATT1	1400	100 Year	21.01	274.93	276.73	276.73	277.23	0.029713	3.13	6.72	6.78	1.00
EASTPATT1	1380.5	Regional	13.98	274.59	275.86	275.86	276.20	0.015900	2.56	5.45	8.61	1.03
EASTPATT1	1380.5	100 Year	21.01	274.59	276.02	276.10	276.49	0.018419	3.03	7.04	11.44	1.13
EASTPATT1	1366.3	Regional	13.98	273.98	275.64	275.39	275.82	0.005922	1.89	8.06	17.11	0.65

HEC-RAS Plan: Default Scenario River: East Patterson \ Reach: EASTPATT1 (Continued)

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)	
EASTPATT1	1366.3	100 Year	21.01	273.98	275.95	275.71	276.10	0.003649	1.83	13.71	18.18	0.54
EASTPATT1	1350	Regional	13.98	273.58	275.13	275.13	275.58	0.015730	2.95	4.74	5.44	1.01
EASTPATT1	1350	100 Year	21.01	273.58	275.53	275.53	275.94	0.010999	2.87	7.83	11.11	0.88
EASTPATT1	1325	Regional	13.98	272.85	274.18	274.44	274.67	0.018636	3.10	4.51	5.64	1.11
EASTPATT1	1325	100 Year	21.01	272.85	274.34	274.53	275.01	0.023649	3.71	7.09	35.73	1.26
EASTPATT1	1300	Regional	13.98	272.48	273.89	273.57	273.97	0.007497	1.30	10.72	16.17	0.51
EASTPATT1	1300	100 Year	21.01	272.48	274.24	273.75	274.31	0.004868	1.23	17.14	20.49	0.43
EASTPATT1	1275	Regional	13.98	271.99	273.27	273.06	273.43	0.012924	1.79	7.80	10.82	0.67
EASTPATT1	1275	100 Year	21.01	271.99	273.27	273.27	273.64	0.029155	2.69	7.81	10.83	1.01
EASTPATT1	1250	Regional	13.98	271.93	272.17	272.11	272.24	0.049415	1.53	13.11	57.32	1.09
EASTPATT1	1250	100 Year	21.01	271.93	272.41	272.18	272.45	0.010964	1.17	28.17	65.51	0.58
EASTPATT1	1225	Regional	13.98	270.00	272.18		272.18	0.000010	0.10	140.46	74.96	0.02
EASTPATT1	1225	100 Year	21.01	270.00	272.42		272.42	0.000016	0.14	158.56	77.56	0.03
EASTPATT1	1202.5	Regional	13.98	270.95	272.14		272.18	0.012104	0.83	16.75	25.24	0.33
EASTPATT1	1202.5	100 Year	21.01	270.95	272.37		272.41	0.011523	0.91	22.97	29.05	0.33
EASTPATT1	1200	Regional	13.98	270.78	272.10		272.12	0.007963	0.75	18.61	23.93	0.27
EASTPATT1	1200	100 Year	21.01	270.78	272.32		272.36	0.008607	0.86	24.43	27.17	0.29
EASTPATT1	1175	Regional	13.98	269.96	270.78	270.78	271.06	0.124811	2.35	5.94	10.59	1.00
EASTPATT1	1175	100 Year	21.01	269.96	271.06	270.98	271.32	0.086302	2.29	9.19	12.98	0.87
EASTPATT1	1150	Regional	13.98	269.00	270.22	269.52	270.24	0.005254	0.64	21.97	26.56	0.22
EASTPATT1	1150	100 Year	21.01	269.00	270.41		270.44	0.006417	0.77	27.46	29.22	0.25
EASTPATT1	1125	Regional	13.98	269.00	270.00		270.01	0.003517	0.47	30.03	43.10	0.18
EASTPATT1	1125	100 Year	21.01	269.00	270.17		270.18	0.003876	0.56	37.40	45.02	0.19
EASTPATT1	1100	Regional	13.98	268.98	269.40		269.51	0.090032	1.46	9.56	28.04	0.80
EASTPATT1	1100	100 Year	21.01	268.98	269.54		269.66	0.068063	1.51	13.90	31.48	0.73
EASTPATT1	1075	Regional	13.98	266.93	268.15	267.65	268.19	0.011671	0.91	15.48	21.20	0.33
EASTPATT1	1075	100 Year	21.01	266.93	268.35	267.81	268.41	0.012079	1.08	19.99	23.88	0.35
EASTPATT1	1050	Regional	13.98	265.93	266.53	266.53	266.75	0.133179	2.04	6.84	16.27	1.01
EASTPATT1	1050	100 Year	21.01	265.93	266.68	266.68	266.93	0.124544	2.24	9.38	18.45	1.00
EASTPATT1	1025	Regional	13.98	264.88	265.86	265.28	265.87	0.004332	0.58	24.66	32.39	0.20
EASTPATT1	1025	100 Year	21.01	264.88	266.04	265.38	266.06	0.005010	0.70	30.71	34.50	0.23
EASTPATT1	1000	Regional	13.98	264.78	265.40	265.22	265.45	0.020478	1.03	13.51	30.66	0.50
EASTPATT1	1000	100 Year	21.01	264.78	265.53	265.31	265.60	0.020480	1.20	17.56	31.97	0.52

Proposed Conditions

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HEC-RAS Plan: Default Scenario River: East Patterson \ Reach: EASTPATT1

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)	
EASTPATT1	2025	Regional	10.22	293.70	294.05	294.02	294.13	0.027048	1.25	8.46	40.17	0.82
EASTPATT1	2025	100 Year-SCS	13.87	293.70	294.09	294.07	294.19	0.029172	1.43	10.16	41.69	0.88
EASTPATT1	2000	Regional	10.22	291.88	292.24	292.24	292.33	0.046867	1.36	7.53	42.90	1.03
EASTPATT1	2000	100 Year-SCS	13.87	291.88	292.28	292.28	292.39	0.043181	1.45	9.62	50.73	1.02
EASTPATT1	1975	Regional	10.22	289.92	290.36	290.28	290.43	0.017932	1.19	8.60	29.06	0.70
EASTPATT1	1975	100 Year-SCS	13.87	289.92	290.43	290.35	290.51	0.018849	1.31	10.55	31.83	0.73
EASTPATT1	1950	Regional	10.22	288.64	288.97	288.97	289.08	0.041335	1.46	6.98	32.29	1.01
EASTPATT1	1950	100 Year-SCS	13.87	288.64	289.03	289.03	289.15	0.039341	1.57	8.86	35.69	1.00
EASTPATT1	1925	Regional	10.22	287.10	287.75	287.53	287.78	0.006122	0.81	12.59	33.66	0.42
EASTPATT1	1925	100 Year-SCS	13.87	287.10	287.82	287.60	287.87	0.006903	0.90	15.42	38.66	0.45
EASTPATT1	1900	Regional	10.22	286.92	287.28	287.24	287.35	0.012038	1.26	9.87	54.37	0.72
EASTPATT1	1900	100 Year-SCS	13.87	286.92	287.32	287.30	287.40	0.012881	1.43	12.57	69.76	0.76
EASTPATT1	1875	Regional	10.22	286.14	286.47	286.47	286.56	0.023345	1.41	7.55	40.36	0.95
EASTPATT1	1875	100 Year-SCS	13.87	286.14	286.52	286.52	286.63	0.021649	1.52	9.68	45.35	0.94
EASTPATT1	1850	Regional	10.22	285.54	285.81	285.75	285.83	0.007855	0.67	15.83	101.04	0.52
EASTPATT1	1850	100 Year-SCS	13.87	285.54	285.85	285.78	285.87	0.006839	0.72	19.95	102.99	0.51
EASTPATT1	1825	Regional	10.22	284.63	284.95	284.95	285.01	0.016996	1.20	11.09	70.03	0.81
EASTPATT1	1825	100 Year-SCS	13.87	284.63	284.97	284.97	285.06	0.021063	1.43	12.74	71.62	0.92
EASTPATT1	1800	Regional	10.22	284.10	284.53	284.43	284.56	0.005464	0.91	14.21	54.73	0.49
EASTPATT1	1800	100 Year-SCS	13.87	284.10	284.59	284.47	284.63	0.005313	1.00	17.71	57.34	0.50
EASTPATT1	1775	Regional	10.22	283.81	284.14	284.14	284.24	0.022109	1.45	8.25	44.21	0.94
EASTPATT1	1775	100 Year-SCS	13.87	283.81	284.18	284.18	284.31	0.021867	1.62	10.31	45.85	0.96
EASTPATT1	1750	Regional	10.22	282.87	283.22	283.12	283.25	0.007193	0.88	11.61	43.40	0.54
EASTPATT1	1750	100 Year-SCS	13.87	282.87	283.27	283.16	283.32	0.007554	0.99	13.99	45.37	0.57
EASTPATT1	1725	Regional	10.22	282.12	282.49	282.49	282.60	0.028186	1.46	6.98	33.86	1.03
EASTPATT1	1725	100 Year-SCS	13.87	282.12	282.55	282.55	282.67	0.024874	1.55	8.97	36.55	1.00
EASTPATT1	1700	Regional	10.22	281.56	282.06	281.86	282.09	0.002747	0.69	15.04	42.37	0.36
EASTPATT1	1700	100 Year-SCS	13.87	281.56	282.14	281.91	282.17	0.002655	0.77	18.51	44.65	0.36
EASTPATT1	1675	Regional	10.22	281.14	281.78		281.81	0.008305	0.87	11.74	35.51	0.48
EASTPATT1	1675	100 Year-SCS	13.87	281.14	281.85		281.90	0.008435	0.94	14.72	41.60	0.50
EASTPATT1	1650	Regional	10.22	280.98	281.48		281.51	0.006290	0.79	13.26	42.70	0.43
EASTPATT1	1650	100 Year-SCS	13.87	280.98	281.54		281.58	0.006538	0.90	16.11	45.69	0.45
EASTPATT1	1625	Regional	10.22	280.41	280.79	280.79	280.90	0.042857	1.43	7.17	35.44	1.01
EASTPATT1	1625	100 Year-SCS	13.87	280.41	280.85	280.85	280.96	0.041165	1.52	9.13	39.82	1.01
EASTPATT1	1600	Regional	10.22	278.99	279.57	279.31	279.60	0.004190	0.73	14.03	33.21	0.36
EASTPATT1	1600	100 Year-SCS	13.87	278.99	279.65	279.37	279.69	0.004664	0.83	16.80	35.70	0.38
EASTPATT1	1575	Regional	10.22	278.97	279.51		279.53	0.002919	0.63	16.14	35.96	0.30
EASTPATT1	1575	100 Year-SCS	13.87	278.97	279.58		279.61	0.003447	0.74	18.73	37.35	0.33
EASTPATT1	1550	Regional	10.22	278.94	279.22	279.22	279.33	0.040263	1.48	6.90	30.80	1.00
EASTPATT1	1550	100 Year-SCS	13.87	278.94	279.38		279.45	0.013464	1.15	12.08	34.67	0.62
EASTPATT1	1525	Regional	10.22	278.00	279.14	278.41	279.14	0.000287	0.30	35.79	48.59	0.10
EASTPATT1	1525	100 Year-SCS	13.87	278.00	279.38		279.39	0.000216	0.31	48.35	53.25	0.09
EASTPATT1	1500	Regional	10.22	277.35	279.13		279.13	0.000130	0.29	37.79	31.71	0.08
EASTPATT1	1500	100 Year-SCS	13.87	277.35	279.37		279.38	0.000139	0.34	45.80	33.45	0.08
EASTPATT1	1468.66	Regional	10.22	277.27	278.82		279.00	0.009720	1.93	5.75	7.65	0.60
EASTPATT1	1468.66	100 Year-SCS	13.87	277.27	279.01		279.23	0.009567	2.14	7.33	9.00	0.61
EASTPATT1	1440.57	Regional	10.22	276.29	277.79	277.79	278.17	0.025523	2.82	3.88	5.39	0.92
EASTPATT1	1440.57	100 Year-SCS	13.87	276.29	277.98	277.98	278.43	0.023478	3.06	5.00	6.12	0.91
EASTPATT1	1425		Culvert									
EASTPATT1	1400	Regional	16.21	274.93	276.54	276.54	276.99	0.030720	2.96	5.47	6.16	1.00
EASTPATT1	1400	100 Year-SCS	26.58	274.93	276.93	276.93	277.47	0.029819	3.26	8.14	7.74	1.02
EASTPATT1	1380.5	Regional	16.21	274.59	275.99	276.01	276.29	0.012495	2.44	7.03	16.16	0.93
EASTPATT1	1380.5	100 Year-SCS	26.58	274.59	276.08	276.23	276.66	0.022153	3.45	8.45	16.45	1.25

HEC-RAS Plan: Default Scenario River: East Patterson \ Reach: EASTPATT1 (Continued)

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)	
EASTPATT1	1366.3	Regional	16.21	273.98	275.76	275.50	275.92	0.004501	1.80	10.41	18.09	0.58
EASTPATT1	1366.3	100 Year-SCS	26.58	273.98	276.05	275.83	276.24	0.004125	2.05	15.66	18.65	0.58
EASTPATT1	1350	Regional	16.21	273.58	275.24	275.24	275.71	0.015510	3.05	5.32	5.76	1.01
EASTPATT1	1350	100 Year-SCS	26.58	273.58	275.70	275.70	276.08	0.009389	2.85	10.81	13.77	0.82
EASTPATT1	1325	Regional	16.21	272.85	274.27	274.49	274.80	0.018688	3.22	5.20	19.61	1.12
EASTPATT1	1325	100 Year-SCS	26.58	272.85	274.39	274.61	275.14	0.026988	4.06	9.29	40.23	1.36
EASTPATT1	1300	Regional	16.21	272.48	273.99	273.63	274.08	0.006681	1.29	12.52	17.49	0.49
EASTPATT1	1300	100 Year-SCS	26.58	272.48	274.41	273.86	274.49	0.004616	1.27	20.86	22.63	0.42
EASTPATT1	1275	Regional	16.21	271.99	273.28	273.13	273.49	0.016764	2.05	7.91	10.89	0.77
EASTPATT1	1275	100 Year-SCS	26.58	271.99	273.41	273.41	273.82	0.028163	2.82	9.42	11.84	1.01
EASTPATT1	1250	Regional	16.21	271.93	272.24		272.30	0.031107	1.44	16.98	59.69	0.90
EASTPATT1	1250	100 Year-SCS	26.58	271.93	272.56	272.25	272.60	0.006906	1.10	38.31	70.29	0.48
EASTPATT1	1225	Regional	16.21	270.00	272.24		272.25	0.000012	0.12	145.25	75.62	0.03
EASTPATT1	1225	100 Year-SCS	26.58	270.00	272.57		272.57	0.000020	0.17	170.12	78.76	0.03
EASTPATT1	1200	Regional	16.21	270.78	272.21		272.24	0.007272	0.76	21.47	25.57	0.26
EASTPATT1	1200	100 Year-SCS	26.58	270.78	272.52		272.56	0.007879	0.88	30.04	29.96	0.28
EASTPATT1	1175	Regional	16.21	269.96	270.87	270.85	271.15	0.108362	2.33	6.97	11.37	0.95
EASTPATT1	1175	100 Year-SCS	26.58	269.96	271.23		271.50	0.075785	2.30	11.53	14.60	0.83
EASTPATT1	1150	Regional	16.21	269.00	270.28		270.31	0.005663	0.68	23.81	27.48	0.23
EASTPATT1	1150	100 Year-SCS	26.58	269.00	270.54		270.58	0.007081	0.85	31.39	30.87	0.27
EASTPATT1	1125	Regional	16.21	269.00	270.06		270.07	0.003617	0.50	32.58	43.77	0.18
EASTPATT1	1125	100 Year-SCS	26.58	269.00	270.28		270.30	0.004085	0.63	42.62	46.34	0.20
EASTPATT1	1100	Regional	16.21	268.98	269.45		269.56	0.081492	1.48	10.93	29.18	0.77
EASTPATT1	1100	100 Year-SCS	26.58	268.98	269.65		269.77	0.058237	1.54	17.28	33.92	0.69
EASTPATT1	1075	Regional	16.21	266.93	268.22	267.70	268.27	0.011800	0.97	16.96	22.12	0.34
EASTPATT1	1075	100 Year-SCS	26.58	266.93	268.48	267.92	268.55	0.012472	1.19	23.22	25.62	0.36
EASTPATT1	1050	Regional	16.21	265.93	266.58	266.58	266.81	0.129945	2.11	7.67	17.01	1.00
EASTPATT1	1050	100 Year-SCS	26.58	265.93	266.78	266.78	267.06	0.120146	2.36	11.25	19.90	1.00
EASTPATT1	1025	Regional	16.21	264.98	265.97	265.35	265.98	0.004352	0.61	27.29	33.65	0.21
EASTPATT1	1025	100 Year-SCS	26.58	264.98	266.21	265.49	266.24	0.005076	0.77	35.80	36.50	0.23
EASTPATT1	1000	Regional	16.21	264.78	265.51	265.25	265.56	0.020482	0.95	17.15	31.84	0.41
EASTPATT1	1000	100 Year-SCS	26.58	264.78	265.71	265.38	265.78	0.020482	1.12	23.66	33.87	0.43

APPENDIX E: Background Information

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Terraprobe
Consulting Geotechnical & Environmental Engineering
Construction Materials Inspection & Testing

DRAFT
HYDROGEOLOGIC STUDY
KIRBY ROAD EXTENSION
CITY OF VAUGHAN, ONTARIO

Prepared For:

Rizmi Holdings Limited
44 Uplands Avenue
Thornhill, Ontario
L3T 4A5

Attention: Cam Milani

File No. 1-15-0700-54
December 17, 2018

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TABLE OF CONTENTS

FIGURES:

APPENDICES:

1.0 INTRODUCTION

1.1 Study Scope and Purpose

Terraprobe Inc. was retained by Rizmi Holdings Ltd. to conduct a Hydrogeological Study in support of the proposed design for Kirby Road extension from Dufferin Street to Bathurst Street, hereinafter referred to as the Site. The Site is bounded to the east by Bathurst Street and to the west by Dufferin Street (Figure 1). The lands to the north generally consist of rural or agricultural properties. The lands adjacent to the south are occupied by a golf course and further south by estate residential developments. There is scattered residential development found along Dufferin Street and Bathurst Street, adjacent to the Site.

Schaeffers & Associates Ltd. (Schaeffers) as a lead consultant has proposed four (4) alternative alignments (i.e., Alignments 4, 5, 6 and 6A) of the Kirby Road extension for consideration (Figure 2A and 2B), as part of a Class Environmental Assessment (Class EA) Study.

The purpose of this report is to assess local and regional hydrogeological conditions and the potential impacts of the proposed Kirby Road Extension on the ground water system. Based on the findings of the Hydrogeological and Geotechnical Investigation, a cost-benefit analysis will be considered for each alignment option.

1.2 Summary of Work Program

A summary of the work program conducted for the study is provided below:

- Background Information Review: A review of available background geologic and hydrogeological information for the Site and the surrounding areas was conducted. This provided background information to allow for characterization of regional hydrogeological conditions. The information reviewed included topographic mapping, geologic mapping, and Ministry of Environment and Climate Change (MOECC) well records.
- Detailed Site Inspection: An inspection of the Site was conducted to review existing site conditions including identification of any hydrogeological features such as significant areas of potential ground water recharge or areas of ground water discharge. In particular, the area in the vicinity of the creek bank was inspected for evidence of ground water seepage or springs.
- Drilling of Boreholes and Installation of Monitoring Wells: A total of twenty one (21) boreholes were drilled to depths varying from 6m to 20m below existing grade. Seven (7) of the boreholes were instrumented with monitoring wells. These boreholes and monitoring wells were completed as part of the geotechnical investigation to obtain subsurface soil and ground water data. Three (3) additional monitoring wells were installed for the hydrogeological assessment. In addition, four (4) drive point piezometers will be installed in the vicinity of the creek crossing.
- Private Well Survey: A well survey was conducted for properties within 1 km of the Site boundary. Well information was obtained from the property owner where possible.
- Hydraulic Conductivity Tests: In-situ hydraulic conductivity tests were conducted in select monitoring wells to assess hydraulic conductivity of the strata. In-situ hydraulic conductivity of the underlying soils were assessed in order to determine potential dewatering requirements.

- Instrumentation and Monitoring: Installation of dataloggers in monitoring wells and drive point piezometers to measure water levels at 1-hour intervals. Monitoring will include monthly monitoring of wells & drive point piezometers, download of dataloggers, data collection and preparation of hydrographs for a period of 1-year. Monitoring well elevations were surveyed relative to a geodetic benchmark.
- Assessment of ground water discharge volumes: Assessed the ground water discharge volumes and requirements for Environmental Activity and Sector Registry (EASR) for construction dewatering to ensure a safe and dry working conditions for construction activities and ground water control plan. The assessment included recommendations for pumping rate, discharge location, and water quality control measures was developed.
- Preparation of Hydrogeologic Study Report: Based on the above information a detailed Hydrogeologic Study report was prepared. The report provides information on existing ground water features and functions of the Site and potential impact of development on ground water resources and surface water features in the area and recommendations for storm water management requirements for infiltration or other low impact development measures. The report provides the following information:
    - Description of the work program and factual information gathered during the study including the results of site inspection and water level measurements. The results of the subsurface investigations conducted in conjunction with Geotechnical Investigation including borehole logs and grain size analysis will be reviewed and summarized
    - Presentation of all the factual information gathered during the study including the background information and results of site subsurface investigation.
    - Identification of significant hydrogeological features and functions at the Site.
    - Provision of a conceptual site model for local and regional hydrogeologic conditions. The conceptual site model will be used as a basis to assess impacts to local surface and ground water features.
    - Calculations of expected ground water inflow if excavations are carried below the ground water table.
    - Calculation of water balance for pre-development and post-development conditions, along with recommendations for appropriate LID measures to maintain ground water infiltration rates.
    - Assessment of the requirements for ground water monitoring in order to confirm long-term impacts.

  It is noted that there is a requirement for monitoring of long-term ground water levels to assess seasonal variations.

2.0 PROPERTY AND PROJECT DESCRIPTION

2.1 Property Location and Project Description

The proposed development at the Site includes the extension of Kirby Road from Dufferin Street to Bathurst Street. The property is bounded to the east by Bathurst Street and to the west by Dufferin Street. The lands to the north generally consist of rural or agricultural properties. The lands adjacent to the south are occupied by a golf course and further south by estate residential developments. There is scattered residential development found along Dufferin Street and Bathurst Street, adjacent to the Site.

The Site is predominantly covered with natural vegetation (grass, shrubs & trees). A tributary of the Don River East Branch traverses the central portion of the Site in a northwest-southeast direction.

2.2 Property Topography and Drainage

The Site is characterized by moraine-type topography consisting of rolling or hummocky ground. The Site elevation varies from approximately 285 to 300 m above mean sea level (asl). The maximum topographic relief across the Site is approximately 15 m. Runoff at the Site is expected to follow the local topography within the Site. The Site is located within the Don River Watershed.

An inspection of the Site was conducted on January 8, 2018 to establish the Site's hydrogeological setting. Generally the Site is well-drained. A tributary of the Don River East Branch is found in the central portion of the Site traversing the Site in a general northwest-southeast direction. At the time of the Site inspection, there was little to no water in the creek. A drainage ditch was noted along Bathurst Street and Dufferin Street. Catch basins were noted to exist along Bathurst Street.

The Site is situated on a height of land or drainage divide, within the headwaters of the Don River. There is a drainage divide approximately 1 km north of the Site, as shown in Appendix B (MOECC's Water Well Record Map). Drainage to the north of the divide is directed towards the Humber River, while drainage to the south of the divide is directed towards the Don River.

The Site is located within an area that is partially regulated by the Toronto and Region Conservation Authority (TRCA).

2.3 Surrounding Land Uses and Servicing

The Site is located in a rural/undeveloped area of the City of Vaughan. The Site is bounded to the east by Bathurst Street and to the west by Dufferin Street. The lands to the north generally consist of rural or agricultural properties. The lands to the south are occupied by golf course and estate residential developments. There is scattered residential development found along Dufferin Street and Bathurst Street,

adjacent to the Site. The surrounding area comprise of properties under municipal service and private servicing for sewer and water.

2.4 Regional Physiography and Geology

From a regional perspective, the Site is situated within a physiographic feature known as the Oak Ridges Moraine and within a physiographic landform feature known as the Kame Moraine. The Oak Ridges Moraine forms a regional surface and ground water divide and is the highest point of land between Lake Ontario to the south and Lake Simcoe and Scugog to the north. The Kame Moraine is a glacial depositional feature seen due to the separation of an ice block from a glacial body resulting in the deposition of accumulated sediments from subsequent melting (Chapman & Putnam, 1984).

The Site is situated within a specific sub-area of the moraine known as the Maple Spur. The Maple Spur consists of a hummocky ridge of kame and outwash material consisting mostly of sand. The northern terminus of the deposit is found on the western portion of the Site (i.e., west half of Lot 30 and Lot 31, Concession 2). The deposit extends considerably to the west of the Site (i.e., west of Dufferin Street). To the west of Dufferin Street, the deposit has been extensively developed through a series of sand and gravel pits.

The kame material has been generally deposited on top of an extensive sheet of glacial till. The glacial till deposit is part of the bevelled till plain of the South Slope physiographic region. The till deposit is defined as part of the Halton Till and comprises of brown to grey silt till material. Generally, the areas immediately to the south and east of the Site are characterized by deposits of glacial till. Glacial till is also found in the eastern portion of the Site.

The geologic conditions in the vicinity of the Site have also been characterized on the basis of water well records. As noted, the area is characterized by a relatively complex sequence of surficial deposits of kame material, underlain by glacial till, and further alternating deposits of sand or sand and gravel. The bedrock in the area consists of shale of the Georgian Bay Formation. Typically, the depth to bedrock is in excess of 100 m deep in this area.

2.5 Regional Hydrogeology

The Oak Ridges Moraine is a regional hydrogeological feature. The Site is situated on the south slope of the Oak Ridges Moraine, approximately 2 km south of the height of land for the moraine. In this area, the moraine forms a zone of regional ground water recharge. Ground water recharge is particularly pronounced in the sandy moraine deposits. Ground water recharge in the glacial till materials is relatively limited.

As noted, the moraine typically consists of alternating layered deposits of coarse grained materials (such as kame sand or sand and gravel), and finer grained materials (such as glacial till). Surficial deposits of

sand or sand and gravel provide significant ground water recharge to aquifer systems beneath the moraine, and also provide for ground water discharge or baseflow into the headwaters of local river systems.

The hydrogeology of the moraine is complex due to variations in soil type, elevation, and surface drainage throughout the moraine area. However, in the vicinity of the Site there are several distinct ground water flow systems. The shallow flow system occurs in the upper kame deposits. The system is generally an unconfined (water table) aquifer system. This system receives considerable local ground water recharge. The ground water discharges into topographically lower areas, such as intermittent water courses and headwaters of the Don River, within approximately 1 km of the Site.

There are intermediate and deep ground water flow systems found beneath confining layers of glacial till. These systems obtain some recharge from the upper system. They typically form aquifer or water bearing zones which are extensive over a distance of several kilometers. These deeper systems discharge near the base of the moraine several kilometers to the south of the Site.

The flow system in the moraine typically follows the regional topography. Generally, shallow flow is directed towards local water courses, valleys and low lying areas such as the Don River East Branch and its tributaries. The deeper ground water flow systems typically follow the regional topography. Flow is generally directed southward, with discharge into major river system such as the Don River.

2.6 Regional Climate

The following general climate data was obtained from Environment Canada publications and from the Environment Canada online database. Average climate data was taken from the Woodbridge climate station for the period of 1939 – 2004.

Table 2-1: Summary of Aurora Station Climate Normal

Mean annual precipitation	744 mm
Mean annual evapotranspiration.	533 mm
Mean annual water surplus	211 mm

The climate is typical for Southern Ontario, with rainfall exceeding evapotranspiration. It is noted that the above are average values, which are representative in a regional context. There will be seasonal and annual variations in these values. However, the average values will govern long-term ground water recharge and discharge rates. Therefore, average values are appropriate for assessment of hydrogeological conditions at the Site.

2.7 Ground Water Resources

The Oak Ridges Moraine is a major regional aquifer complex. Within the moraine there are generally moderate to high yields of good quality water available from intermediate and deep aquifer systems. Terraprobe previously conducted a Hydrogeological Evaluation of a larger Property, which includes the subject Site. The findings of this previous Hydrogeological Evaluation are presented in the report entitled *"Hydrogeologic Evaluation, Proposed Aggregate Extraction Area, Lots 30 and 31, Conc. 2, City of Vaughan, File No. 96250"* dated January 23, 1998. As part of this Hydrogeological Evaluation, a review of the Ministry of the Environment and Climate Change's (MOECC's) water well records was conducted to assess the use of the local ground water resources. Records for approximately 180 wells, within 1 km of the Site were reviewed. A listing of the well records reviewed in this study is provided in the accompanying Appendix A. Selected wells have been plotted in Appendix B, and cross-sections are presented in Appendix C & D. These cross-sections provide an indication of the depth and nature of aquifer systems in the vicinity of the Site.

There are relatively few wells in the direct vicinity of the Site, since most of the Site is agricultural or forested in nature and has not been developed. Similarly, the land immediately to the south, east and west of the Site are urban or estate in nature and are generally provided with piped municipal water. There are several wells used for irrigation purposes associated with the golf course to the south. The irrigation wells for the golf course draw water from a confined sand and gravel aquifer, found at depths of approximately 110 m. The ground water level in this aquifer is lower than that found in the unconfined or surficial aquifer at the Site.

Based on the available information, it is apparent that most domestic wells draw water from intermediate to deep confined aquifers at depths of about 30 to 60 m. There are no records for shallow wells completed in the unconfined kame deposits in the vicinity of the Site. This suggests that kame deposits are generally dry, or that higher or more dependable yields of water can be found at depths in the deeper confined aquifer systems.

Piped municipal water is available in the area. Currently, there is development of residential subdivisions found immediately to the south and west of the Site in the vicinity the Concession 3, Lots 29 and 30. These developed areas are supplied with municipal water from a lake-based source.

2.8 Results of Door to Door Survey

A door-to-door well survey was conducted on September 5, 2017 to assess the locations of water wells in the vicinity of the proposed development. All properties within a 500 m radius of the subject Site were visited. During the survey, a questionnaire was completed with the well owner, where possible. At residences where no one was available to complete the questionnaire, a letter was left informing the resident about the survey encouraging the resident to contact our office.

There are four (4) private residences or wells situated in the immediate vicinity of the Site. A representative of Terraprobe visited each residence to obtain information regarding their well(s) and water supply. The findings of the water well survey program are summarized as follows:

- The residents were not at home at the time of the Site visit; as such, a letter was left behind. No response was received from three (3) residents. One (1) resident responded by email (September 7, 2017) and provided the following information on his well:
    - Type of Well: Drilled
    - Pump Type: Submersible Pump in well
    - Water Treatment System in use: Water Softener
    - Well Construction Date: 1974
    - Well Depth: 36.6 m (120 ft.)
    - Well Use: Residential
    - Number of residents: 2-3
    - Water Quality Issues (in the past): High Iron Concentration
    - Water Quantity Issues (in the past): None
    - Well Water Consumed/Purchased: Consumed (for potable purposes)

Currently, the surrounding residential subdivisions are supplied with piped municipal water from a lake-based source.

2.9 Property Inspection to Assess Hydrogeologic Features

A detailed property inspection was conducted to assess the presence of features which are significant from a hydrogeologic viewpoint. In particular, the property was inspected to assess the following:

- Areas of visible ground water discharge, springs or seepage at the property or in the vicinity of the on-property water courses.
- Areas of potential enhanced ground water recharge such as closed drainage features or depressions or large flat areas which may allow for significant ground water infiltration.
- Inspection of swales and drainage courses for evidence of ground water seepage or springs.
- Evidence of phreatophytic vegetation, which may indicate seasonally high ground water levels and/or ground water discharge and seepage.

The Site is predominantly comprised of natural vegetation (grass, shrubs & trees).

The topography at the Site is generally hilly to rolling with an elevation ranging from 280 to 305 masl. The topography relief across the Site is in the order of 25 m. The western half of the Property consists of forested/vegetated lands and the eastern portion consists of agricultural farm lands. No significant evidence of ground water discharge (i.e., springs or seepage areas) along slopes of the tributary of the East Don River were noted during the site inspection. However, there is a possibility of potential seepage

along the slope of the drainage feature within the property. Due to the hilly and rolling topography at the Site, it is likely that precipitation and overland flow water pools in lower areas at the Site which allows for infiltration and recharge of the ground water system. It is likely that the ground water may provide base flow to the tributary of the East Don River.

There are low lying depression areas located throughout the Site, which may allow for ponding and enhanced infiltration of ground water within the proposed development areas.

2.10 Results of Subsurface Investigation

A subsurface investigation was conducted at the property by Terraprobe during the period of October 30 to November 9 and December 7, 2017. The subsurface investigation was conducted in conjunction with the geotechnical investigation. The findings of the Geotechnical Investigation are provided under a separate cover. A total of twenty one (21) boreholes were drilled to depths varying from 6 m to 20 m below existing grade. All boreholes were advanced using a track-mounted auger. Monitoring wells were installed in ten (10) selected boreholes to permit monitoring of ground water levels. The borehole and monitoring well locations are presented on Figure 2A and 2B.

The soil samples were observed and recorded by a member of our field engineering staff, who logged the borings and examined the samples as they were obtained. All samples obtained during the investigation were sealed into plastic jars, and transported to our geotechnical testing laboratory for detailed inspection and testing.

The geotechnical laboratory testing consisted of grain size distribution (Sieve and Hydrometer) on twelve (12) selected native soil samples from eleven (11) borehole locations. The results of the Sieve and Hydrometer analysis are provided in Appendix F.

The results of the individual boreholes are summarized below and recorded on the accompanying Borehole Logs (Appendix E).

It should be noted that the soil conditions are confirmed at the borehole locations only and may vary between and beyond the boreholes. The stratigraphic boundaries as shown on the logs are based on a non-continuous sampling. These boundaries represent an inferred transition between the various strata, rather than a precise plane of geologic change.

In summary the subsurface conditions encountered in the boreholes advanced across the Site were found to be generally consistent. Boreholes encountered a surficial layer of asphalt pavement and/or topsoil underlain by sand and silt, gravelly sand and clayey silt earth fill which was in turn underlain by undisturbed native soil extending to the full depth of investigation. The native soils predominantly consisted of sand/sandy silt to silty sand with inconsistent layers/lenses of silt or clayey silt at varying depths. Cross-Sections of the site are provided in Figures 3.

2.10.1 Topsoil/Pavement

A topsoil layer was encountered at the ground surface at each borehole location with the exception of Borehole 1, 4, 20 and 21. The topsoil thickness ranged from about 150 to 350 mm. The above-noted thickness of the topsoil layer was measured from the borehole drilling and is approximate.

An asphalt pavement structure was encountered in Boreholes 1 and 21.

2.10.2 Earth Fill

Earth fill materials, consisting of the matrix of sand and silt, gravelly sand and clayey silt were encountered beneath the topsoil/pavement layer or at the ground surface in all boreholes with the exception of Boreholes 1 and 21 and extended to about 0.8 m to 6.1 m depths below grade. The relatively deep earth fill zones were encountered in Boreholes 10 and 17, extending to about 6.1 m to 4.6 m depth below grade, respectively. The earth fill materials generally consist of trace amounts of organic matter.

2.10.3 Sand/Sandy Silt to Silty Sand

The sand/sandy silt to silty sand, with trace to some gravel and clay were encountered beneath the earth fill zones or the asphalt pavement structure at depths ranging from 0.4 m (Borehole 21) to 6.1 m (Borehole 10) depths below grade and extended to depths varying from about 2.3 m (Borehole 21) to about 20.3 m (Borehole 3) below grade at each borehole location.

2.10.4 Silt

Silt with trace to some clay and sand was encountered beneath the sand/sandy silt to silty sand layers at depths ranging from about 6.1 to 12.2 m below grade and extended to depths of about 6.6 m to 14.2 m below grade (the full depths of the investigation) in Boreholes 5, 6, 10, 19 and 20.

2.10.5 Clayey Silt

Clayey silt deposit, with trace to some gravel and trace amounts of gravel was encountered beneath the silt layer, earth fill zone or sand layer at depths varying from about 1.5 to 10.7 m below grade and extended to depth ranging from about 4.6 m to 12.6 m (the full depth of investigation) below grade in Boreholes 5, 18 and 21.

2.11 Geotechnical Laboratory Test Results

Geotechnical laboratory testing consisted of conducting a sieve and hydrometer analysis on selected soil samples. The results of the Sieve and Hydrometer analysis are appended and summarized below.

Table 2-3: Summary of Geotechnical Laboratory Test Results

Borehole No. Sample No.	Sampling Depth below Grade	Gravel (%)	Sand (%)	Silt (%)	Clay (%)	Description (MIT System)
Borehole 1 Sample 5	3.3 m	0	69	29	2	SILTY SAND, trace clay
Borehole 2 Sample 14	2.5 m	1	22	70	7	SANDY SILT, trace clay, trace gravel
Borehole 3 Sample 7	6.3m	0	94	4	2	SAND, trace silt, trace clay
Borehole 3 Sample 14	17.0 m	0	76	21	3	SILTY SAND, trace clay
Borehole 5 Sample 9	9.4 m	0	1	84	15	SILT, some clay, trace sand
Borehole 8 Sample 4	2.5 m	0	92	6	2	SAND, trace silt, trace clay
Borehole 10 Sample 8	7.8	0	3	87	10	SILT, some clay, trace sand
Borehole 13 Sample 6	4.8	0	93	5	2	SAND, trace silt, trace clay
Borehole 15 Sample 4	2.5	5	22	54	19	SANDY SILT, some clay, trace gravel
Borehole 18 Sample 5	3.3	1	17	48	34	CLAYEY SILT, some sand, trace gravel
Borehole 20 Sample 4	2.5	10	67	20	3	SILTY SAND, trace gravel, trace clay
Borehole 21 Sample 4	2.5	0	12	63	25	CLAYEY SILT, some sand

2.12 Ground Water

Ground water level observations were made in each of the boreholes as they were drilled and after completion. The observations are reported on the borehole logs (Appendix E).

All boreholes and monitoring wells were surveyed using an R10 Trimble GPS using a Geodetic Datum. The ground water levels were measured in the monitoring wells installed in boreholes. Details of the measured ground water elevations are summarised in the Table below.

Table 2-4: Summary of Ground Water Elevations

Monitoring Well	Well Depth (Elevation)	Water Level on January 8, 2018		Water Level on January 25, 2018	
		Depth of Ground Water (mbgs)	Ground water Elevation (masl)	Depth of Ground Water (mbgs)	Ground Water Elevation (masl)
MW 2	6.44	6.3	283.1	DRY	DRY
MW 3	18.92	17.9	283.1	17.9	283.1
MW 6	4.91	1.8	276.8	1.6	277.0
MW 8	13.17	-	-	DRY	DRY
MW 9	5.94	5.4	275.7	5.2	275.9
MW 10	7.66	3.1	272.6	3	272.7
MW 13	13.09	DRY	DRY	DRY	DRY
MW 14	18.2	17.9	281.4	DRY	DRY
MW 16	8.58	DRY	DRY	DRY	DRY
MW 20	-	-	-	-	-

Note: mbgs: meter below ground surface; masl: meters above mean sea level
Ground Surface elevations were referenced to a geodetic benchmark

The ground water level at the Property ranges from 1.6 m to 17.9 m below the existing grade level. It should be noted that ground water levels will fluctuate seasonally, and additional monitoring events throughout the year will be required to assess seasonal variations. The shallow ground water at the Site is expected to follow the local topography.

The hydraulic conductivities of the subsurface soils were estimated based on in-situ single well response tests and grain size analysis. The hydraulic conductivity determined based on the grain size analysis are summarized in the Table below:

Table 2-5: Summary of Hydraulic Conductivities

Borehole # Sample #	Sampling Depth below Grade	Description (MIT System)	Estimated Hydraulic Conductivity (m/sec)
Borehole 1 Sample 5	3.3 m	SILTY SAND, trace clay	10^{-5}
Borehole 2 Sample 4	2.5 m	SANDY SILT, trace clay, trace gravel	10^{-7}
Borehole 3 Sample 7	6.3 m	SAND, trace silt, trace clay	10^{-5}
Borehole 3 Sample 14	17.0 m	SILTY SAND, trace clay	10^{-5}
Borehole 5 Sample 9	9.4 m	SILT, some clay, trace sand	10^{-8}
Borehole 8 Sample 4	2.5 m	SAND, trace silt, trace clay	10^{-5}
Borehole 10 Sample 8	7.8 m	SILT, some clay, trace sand	10^{-8}

Borehole 13 sample 6	4.8 m	SAND, trace silt, trace clay	10^{-5}
Borehole 15 Sample 4	2.5 m	SANDY SILT, some clay, trace gravel	10^{-9}
Borehole 18 Sample 5	3.3 m	CLAYEY SILT, some sand, trace gravel	10^{-9}
Borehole 20 Sample 4	2.5 m	SILTY SAND, trace gravel	10^{-5}
Borehole 21 Sample 4	2.5 m	CLAYEY SILT, some sand, trace gravel	10^{-9}

Based on the above, the hydraulic conductivity of the native overburden soils ranges from 10^{-5} to 10^{-9} m/s.

Single Well Response Tests (SWRT) were conducted on three (3) monitoring wells (MW 6, 9 & 10), and the resulting hydraulic conductivity (K) values, in comparison to the K values obtained from the grain size analysis and published data, are summarized below:

Table 2-6: Summary of Hydraulic Conductivities from Single Well Response Test/Grain Size Analysis/Published Data

Monitoring Well	Strata Screened	Hydraulic Conductivity (m/s)		
		Well Response Test	Grain Size Analysis	Published Data
MW 6	Sand	3.0×10^{-6}	10^{-5} to 10^{-9}	$10^{-4} – 10^{-6}$
MW 9	Sandy Silt to Silty Sand	4.8×10^{-7}	10^{-5} to 10^{-9}	10^{-4} to 10^{-7}
MW 10	Sand	5.6×10^{-6}	10^{-5} to 10^{-9}	$10^{-4} – 10^{-6}$

The hydraulic conductivity value based on the SWRTs is approximately on the order of 10^{-6} to 10^{-7} m/s. This is in lower spectrum of the published data, and is primarily due to the presence of large silt content within the soil matrix, which significantly reduces the permeability of the soil. Due to the significant silt content in the soil, the hydraulic conductivity values retrieved from the SWRT is inferred to be more accurate as compared to the grain size analysis. The hydraulic conductivity test results are provided in Appendix K.

2.13 Wellhead Protection Areas and Aquifer Vulnerability

The following maps by the York Region were reviewed (Appendix G, H and I):

- Map 6 – Wellhead Protection Areas and Intake Protection Zones
- Map 7 – Oak Ridges Moraine Aquifer Vulnerability Areas and Watershed Boundaries
- Map 14 – Highly Vulnerable Aquifers
- Oak Ridges Moraine Conservation Plan

The Site is not located within a Wellhead Protection (WPA) or Intake Protection Zone (Appendix G), however, is located within a low to highly Aquifer Vulnerability Area (Appendix H & I). The Site is located within Oak Ridges Moraine Conservation Area.

2.14 Toronto Region Conservation Authority (TRCA)

The Toronto and Region Conservation Authority's (TRCA's) online interactive map was accessed to determine if the Site is located within a regulated area of the TRCA (Appendix J). A portion of the Site is located within the TRCA regulated area.

Additionally, the TRCA was contacted to inquire about the nature of how the Site is regulated. At the time of this report, a response from the TRCA was not received. Upon receiving a response from the TRCA, this report will be revised to include the nature of the regulation at the Site by the TRCA.

3.0 DISCUSSION AND ANALYSIS

3.1 Proposed Development Plan

The proposed development at the Site includes the extension of Kirby Road from Dufferin Street to Bathurst Street along four (4) proposed alignments (Alignments 4, 5, 6 and 6A). The proposed alignments are provided in Figures 2A and 2B.

A water balance calculation was conducted for each proposed alignment option.

The Site statistics of the proposed road alignment was provided by the client. The following summarizes the proposed land coverage areas for the development for each alignment option:

Alignment 4:

Area covered by hard surface paving…… 4.6 ha
Landscape areas for infiltration…… 9.5 ha
Total Area…… 14.1 ha

Alignment 5

Area covered by hard surface paving…… 4.6 ha
Landscape areas for infiltration…… 10.0 ha
Total Area…… 14.6 ha

Alignment 6

Area covered by hard surface paving…… 4.8 ha
Landscape areas for infiltration…… 8.8 ha
Total Area…… 13.6 ha

Alignment 6A

Area covered by hard surface paving…… 4.8 ha
Landscape areas for infiltration…… 9.1 ha
Total Area…… 13.9 ha

3.2 Principal Hydrogeologic Features and Functions

The hydrogeologic features and functions associated with the property were assessed based on the results of the subsurface investigation completed by Terraprobe and available geologic and hydrogeologic

information. The results of our study indicate that the site hydrogeologic characteristics can be summarized as follows:

- The principal drainage feature located at the Site is the Tributary of the East Don River, which is located within the central portion of the Site.
- The Site is located within an area of low to high aquifer vulnerability. The site is not located within a Wellhead Protection Zone or an Intake Protection Zone.
- The Site is located within an area that is regulated by the Toronto and Region Conservation Authority.
- The Site is characterized by a surficial layer of asphalt pavement and/or topsoil underlain by sand and silt, gravelly sand and clayey silt earth fill which in turn is underlain by undisturbed native soil extending to the full depth of investigation. The native soils consisted of sand/sandy silt to silty sand, with inconsistent layers/lenses of silt or clayey silt at varying depths.
- The subsurface soils at the Site have hydraulic conductivities ranging between 10^{-6} to 10^{-7} m/s. The medium to high permeability of the subsurface soils at the Site will allow for infiltration, ground water recharge and base flow to the tributary of the East Don River at the Site. The recharge rate for this type of soil is typically on the order of 200 mm/year.
- The ground water level was found to be approximately 1.6 m to 17.9 m below the existing grade. The shallow ground water flow at the Site is expected to follow the local topography. During precipitation events, water will tend to flow overland and drain along the ground surface following the Site topography.
- The Site is situated on the south slope of the Oak Ridges Moraine, approximately 2 km south of the height of land for the moraine. In this area, the moraine forms a zone of regional ground water recharge. Ground water recharge is particularly pronounced in the sandy moraine deposits. Ground water recharge in the glacial till materials is relatively limited.
- The regional hydrogeologic conditions of the Site comprise of three ground water flow systems: shallow, intermediate and deep aquifer systems. The shallow flow system occurs in the upper kame deposits, in an unconfined aquifer setting, and follows the local topography of the area and discharges into topographically lower areas, such as intermittent water courses and headwaters of the Don River, within approximately 1 km of the Site. The intermediate and deep ground water flow systems are found beneath confining layers of glacial till, and they follow the regional topography.
- Based on the private water well survey, the surrounding area within a 500 m radius (study area) of the subject site is predominantly on municipal water. There are four (4) private residences or wells situated in the immediate vicinity of the Site. There is no significant use of ground water in the area.

The above hydrogeologic features and functions were considered in assessing the potential impact of the proposed development. This information was used to assess the impact of proposed development, and provide mitigating measures to ensure that hydrogeologic function is not adversely affected.

3.3 Water Balance for Pre- and Post- Development Conditions

The area of the Site is considered a ground water recharge zone. The soil at the property are of medium permeability. The Site consists of hilly topography, as such there exists areas of enhanced or localized higher recharge (such as closed depression) across the property.

A water balance model was prepared for the property to assess the distribution of rainfall run-off and infiltration for existing (pre- and post- development) conditions (Appendix L). The model is based on Environment Canada's climate data presented in Section 2.6 of this report. The Thornthwaite method was used to evaluate the relative balance between rainfall, evaporation and evapotranspiration in the shallow soil zone as shown in Appended- Table 3. Based on this calculation, a water balance was developed.

In summary, the total ground water recharge component for the area is about 200 mm/a. This recharge rate was determined using the MOECC's Table 2 and Table 3 approach in the *Technical Information Requirements for Land Development Applications* (1995).

The detailed water balance calculations for each road alignment option are presented in Appendix L. The water balance for pre-development conditions is summarized in Table 3.1 - 3.4 below:

Table 3-1 Pre- Development Water Balance - Alignment 4

	Area (m^2)	Precipitation (m^3)	Evapotranspiration (m^3)	Infiltration (m^3)	Run-Off (m^3)
Proposed Development	141,475	105,257	75,406	20,896	8,955

Table 3-2 Pre- Development Water Balance - Alignment 5

	Area (m^2)	Precipitation (m^3)	Evapotranspiration (m^3)	Infiltration (m^3)	Run-Off (m^3)
Pre-Development	146,238	108,801	77,945	21,599	9,257

Table 3-3 Pre- Development Water Balance - Alignment 6

	Area (m^2)	Precipitation (m^3)	Evapotranspiration (m^3)	Infiltration (m^3)	Run-Off (m^3)
Pre-Development	136,315	101,418	65,514	18,155	17,750

Table 3-4 Pre- Development Water Balance - Alignment 6A

	Area (m^2)	Precipitation (m^3)	Evapotranspiration (m^3)	Infiltration (m^3)	Run-Off (m^3)
Pre-Development	139,248	103,601	57,062	15,812	30,726

The water balance calculations for the post-development case are provided in the Appendix L. The results of the analysis are summarized in Table 3.5 - 3.8 below:

Table 3-5 Post- Development Water Balance without LID Measures – Alignment 4

	Area (m^2)	Precipitation (m^3)	Evapotranspiration (m^3)	Infiltration (m^3)	Run-Off (m^3)
Proposed Development	141,475	105,257	50,643	14,034	40,581

Table 3-6 Post- Development Water Balance without LID Measures – Alignment 5

	Area (m^2)	Precipitation (m^3)	Evapotranspiration (m^3)	Infiltration (m^3)	Run-Off (m^3)
Proposed Development	146,238	108,801	53,427	14,805	40,569

Table 3-7 Post- Development Water Balance without LID Measures – Alignment 6

	Area (m^2)	Precipitation (m^3)	Evapotranspiration (m^3)	Infiltration (m^3)	Run-Off (m^3)
Proposed Development	136,315	101,418	47,157	13,068	41,193

Table 3-7 Post- Development Water Balance without LID Measures – Alignment 6A

	Area (m^2)	Precipitation (m^3)	Evapotranspiration (m^3)	Infiltration (m^3)	Run-Off (m^3)
Proposed Development	139,248	103,601	48,537	13,450	41,614

Post-development infiltration will occur in open/grassed areas. In the post-development case, there is a decrease in the amount of infiltration and therefore an increase in the available surface water run-off. The post-construction infiltration deficit for each alignment option is summarized below:

Alignment 4:

In the post-construction period, there will be a potential infiltration deficit of approximately 6,862 m^3 compared to the pre-construction period. In the post-construction period, there is approximately 40,581 m^3 of surface water runoff is available to supplement the infiltration deficit. Approximately 20% of the surface water runoff is required to match the pre-construction infiltration rates.

Alignment 5:

In the post-construction period, there will be a potential infiltration deficit of approximately 6,794 m^3 compared to the pre-construction period. In the post-construction period, there is approximately 40,569 m^3 of surface water runoff is available to supplement the infiltration deficit. Approximately 20% of the surface water runoff is required to match the pre-construction infiltration rates.

Alignment 6:

In the post-construction period, there will be a potential infiltration deficit of approximately 5,087m^3 compared to the pre-construction period. In the post-construction period, there is approximately 41,193 m^3 of surface water runoff is available to supplement the infiltration deficit. Approximately 14% of the surface water runoff is required to match the pre-construction infiltration rates.

Alignment 6A:

In the post-construction period, there will be a potential infiltration deficit of approximately 2,362 m^3 compared to the pre-construction period. In the post-construction period, there is approximately 41,614 m^3 of surface water runoff is available to supplement the infiltration deficit. Approximately 7% of the surface water runoff is required to match the pre-construction infiltration rates.

3.4 Mitigating Measures to Maintain Hydrogeologic Functions

3.4.1 Maintenance of Ground Water Recharge

The existing ground water recharge rate at the Site is approximately 200 mm/a. This recharge occurs in a broad diffuse manner over the entire Site. Mitigation measures are available to maintain recharge rates. There are no wetlands in the immediate vicinity of the Site; however, the Tributary of the East Don River traverses the central portion of the Site in a northwest-southeast direction. The ground water at the Site may provide base flow to the Tributary of the East Don River.

Appropriate low-impact development (LID) techniques which can be applied include maintenance of overall ground water recharge across the Site area. In order to maintain ground water recharge for the Site, LID measures should be implemented. There is a surplus of water available following development to maintain ground water recharge and function. Based on the property conditions, the following typical LID measures may be suitable for the proposed development:

- Directing and controlling runoff water towards the road-side swales along the boulevard/easement area of the proposed Kirby Road development through gradual outward sloping of the road from its center.

The storm water management measures must specifically address the maintenance of ground water recharge of the proposed development in order to preserve the tributary of East Don River located in the central portion of the Site.

3.4.2 Maintenance of Ground Water Transmission Pathways

As previously indicated the soils present on the property are of medium permeability, which would provide potential pathways for ground water discharge towards the Tributary of the East Don River. The proposed development will include the construction of the Kirby Road Extension from Dufferin Street and Bathurst Street. The road construction would involve cut and fill. Based on the observed ground water elevation, the excavation would unlikely extend below the water table. However, installation of any services (sewer or watermain) may disrupt the ground water flow, and its continuity should be maintained where practical. Generally, the ground water transmission pathways can be maintained through the following means:

- Bedding material beneath underground services may serve as a subdrain to collect and convey ground water. To prevent drainage of ground water along bedding material, clay trench plugs should be provided at all manhole locations in order to cut-off the granular beddings.
- The excavation of any underground services or utilities across the site must be backfilled using material of similar permeabilities to minimize disruption to the ground water regime. It is recommended that backfilling of the trenches/excavations, where required, be done using the native excavated soils.

4.0 REQUIREMENTS FOR CONSTRUCTION DEWATERING

The native soil encountered at the Site predominantly consist of sand/sandy silt to silty sand. The sand layer in the low lying areas is identified as an aquifer unit that may provide significant volumes of ground water seepage during the excavation. The excavation for the culvert for the proposed road crossing across the creek will require dewatering to ensure the excavation area is dry.

At the time of this report, detailed information on the size and depth of the culvert was not provided; as such anticipated ground water seepage volumes into excavation and requirements for dewatering could not be assessed. Once the detailed information of the proposed culvert is available, Terraprobe will conduct ground water seepage assessments to determine the volume of water that will be encountered in the culvert excavation during the construction period.

5.0 SUMMARY AND CONCLUSIONS

The results of the hydrogeologic study indicate the following:

(i) The Site is located within the Don River Watershed

(ii) The Site is located within an area of low to high aquifer vulnerability. The Site is not located within a Wellhead Protection Zone or an Intake Protection Zone.

(iii) The Site is located within an area that is regulated by the Toronto and Region Conservation Authority.

(iv) The Site is characterized by a surficial layer of asphalt pavement and/or topsoil underlain by sand and silt, gravelly sand and clayey silt earth fill which in turn is underlain by undisturbed native soil extending to the full depth of investigation. The native soils consisted of sand/sandy silt to silty sand with inconsistent layers/lenses of silt or clayey silt.

(v) During precipitation events, water will tend to flow overland and drain along the ground surface following the Site topography. The ground water level at the Site was found to be approximately 1.6 m to 17.9 mbgs. The shallow ground water flow at the Site is expected to follow the local topography. Long term ground water monitoring of the wells would be required to determine the changes in the ground water levels as a result of seasonal fluctuations.

(vi) The subsurface soils at the Site have hydraulic conductivities ranging between 10^{-6} to 10^{-7} m/s. The medium to high permeability of the subsurface soils at the Site will allow for infiltration, ground water recharge and base flow to the Tributary of the East Don River at the Site. The recharge rate for this type of soil is typically on the order of 200 mm/year.

(vii) The Site is situated on the south slope of the Oak Ridges Moraine, approximately 2 km south of the height of land for the moraine. In this area, the moraine forms a zone of regional ground water recharge. Ground water recharge is particularly pronounced in the sandy moraine deposits. Ground water recharge in the glacial till materials is relatively limited.

(viii) The regional hydrogeological conditions of the Site comprise of three ground water flow systems: shallow intermediate and deep aquifer system. The shallow flow system occurs in the upper kame deposits, in an unconfined aquifer setting and follows the local topography of the area and

discharges into topographically lower areas, such as short intermittent water courses and headwaters of the Don River, within approximately 1 km of the Site. The intermediate and deep ground water flow systems are found beneath confining layers of glacial till, and they follow the regional topography.

(ix) The principal drainage feature located at the Site is the Tributary of the East Don River, which is located in its central portion. It is likely that ground water will contribute base flow to the Tributary of the East Don River.

(x) Based on the private water well survey, the surrounding area within a 500 m radius (study area) of the subject site is predominantly on municipal water. There are four (4) private residences or wells situated in the immediate vicinity of the Site. There is no significant use of ground water in the area.

(xi) Conventional low impact development storm water management measures should be applied to maintain water balance in the post-development conditions. Final design of the above measures should be reviewed in conjunction with the storm water management plan for the Site.

(xii) The development of the Site will result in an overall reduction of ground water recharge and a significant increase in surface water runoff unless appropriate mitigation measures are provided at the design stage. The following mitigation measures can be implemented for the Site.

a. Directing and controlling runoff water towards the road-side swales along the boulevard/easement area of the proposed Kirby Road development through gradual outward sloping of the road from its centre.

(xiii) Based on the measured ground water elevation across the Site, the excavation for the road construction is not likely to extend below the water table, however, perched ground water may be excavated into the excavation. Perched ground water entering the excavation can be controlled by pumping from filtered sumps at the base of the excavation.

(xiv) The proposed alignments will cross the tributary of the East Don River. The details of the proposed structures/culverts is not available yet, as such estimation of ground water seepage volumes and requirements for dewatering cannot be assessed at this time. Ground water seepage rates must be estimated at the detailed design stage.

6.0 REFERENCES

1. Russel, H.A.J., Moore, A., Logan, C., Kenny, F., Brennand, T.A., Sharpe, D.R., and Barnett, P.J. 1998: Sediment Thickness of the Greater Toronto and Oak Ridges Moraine Areas, Southern Ontario; Geological Survey of Canada, Open File 2892, Scale 1:200,000.

2. Surficial Geology of the Greater Toronto and Oak Ridges Moraine Area, Southern Ontario. Ministry of Northern Development and Mines, Ontario, 1997.

3. Barnett, P.J., Cowan, W.R. and Henry, A.P. 1991: Quaternary Geology of Ontario, Southern Sheet; Ontario Geological Survey Map 2544, scale 1:1,000,000.

4. Ontario Geological Survey 1991: Bedrock Geology of Southern Ontario, Southern Sheet; Ontario Geological Survey Map 2556, scale 1:1,000,000.

5. Structural Model of the Greater Toronto and Oak Ridges Moraine Areas, Southern Ontario: Oak Ridges Moraine Sediment, scale 1:250,000.

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We trust that the above-noted information is suitable for your review. If you have any questions regarding this information, please do not hesitate to contact the undersigned.

Yours truly,

Terraprobe Inc.

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Principal

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Muhammad Shahid, M.Sc., P.Geo., QP_{ESA}
Senior Project Manager

DRAFT
Ahmad Sarwar, B.Sc., G.I.T.
Project Manager

Appendix E
Engineering Drawings

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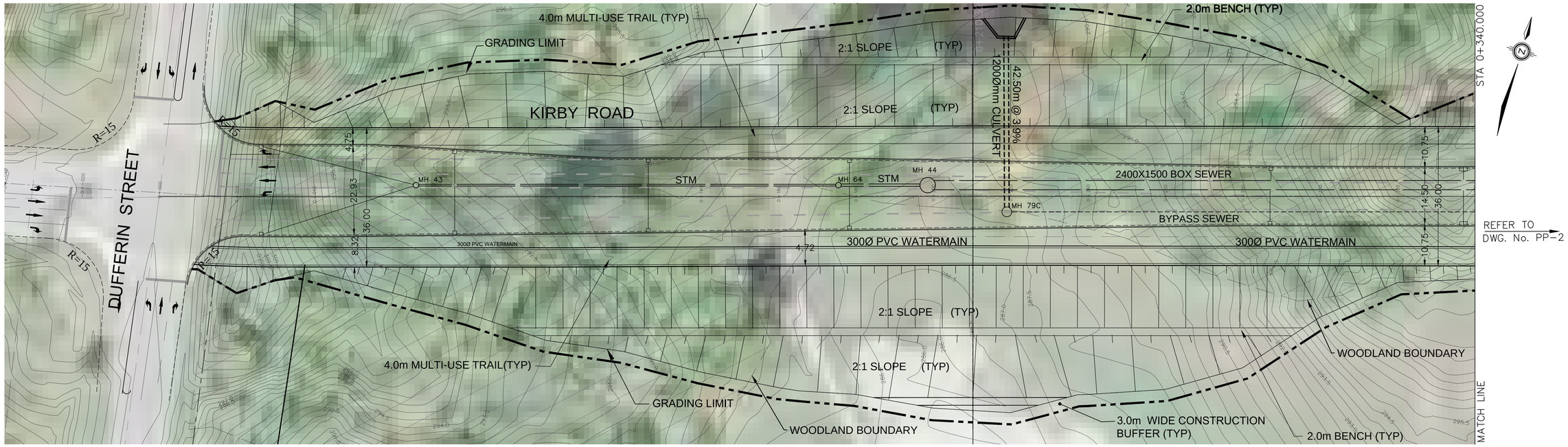
for 2-sided printing purposes



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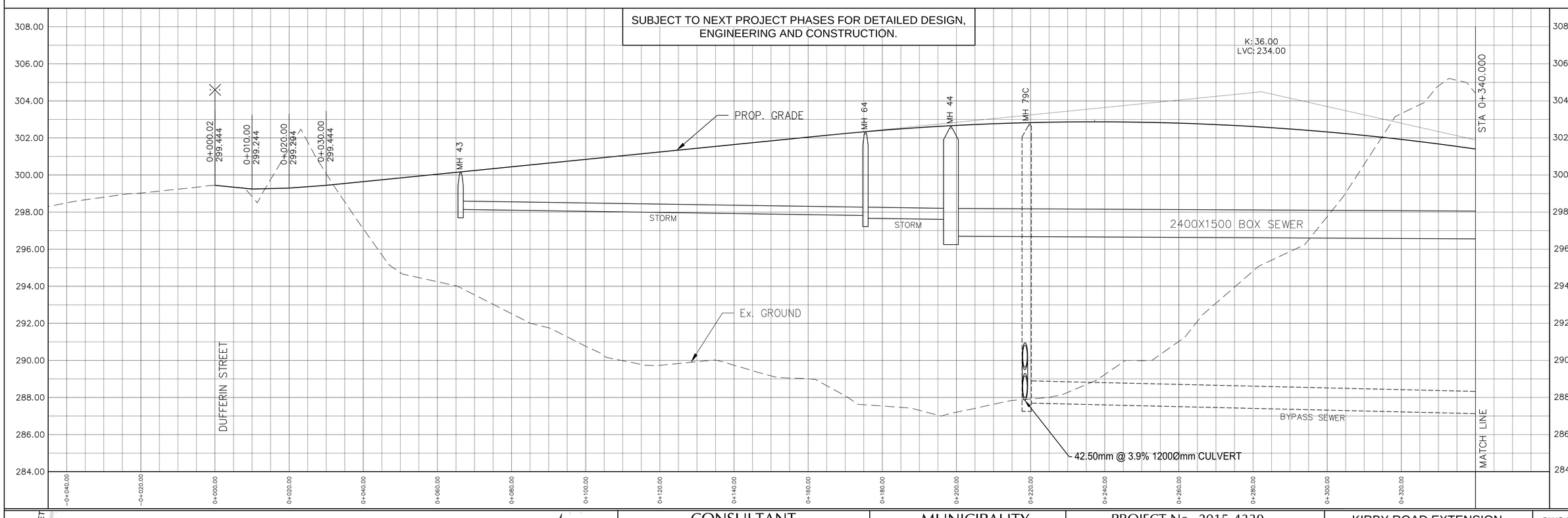

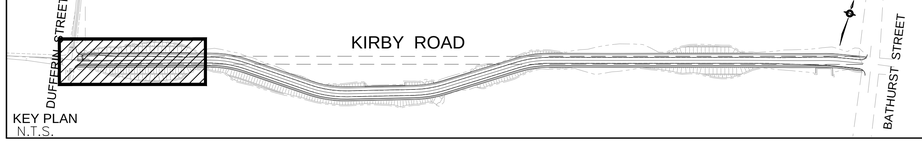

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MUNICIPALITY

VAUGHAN

PROJECT No. 2015-4339

SCALE:

HORIZONTAL 0 5 10 15 20 25 30 35 40 45 50m
VERTICAL 0 1 2 3 4 5 6 7 8 9 10m

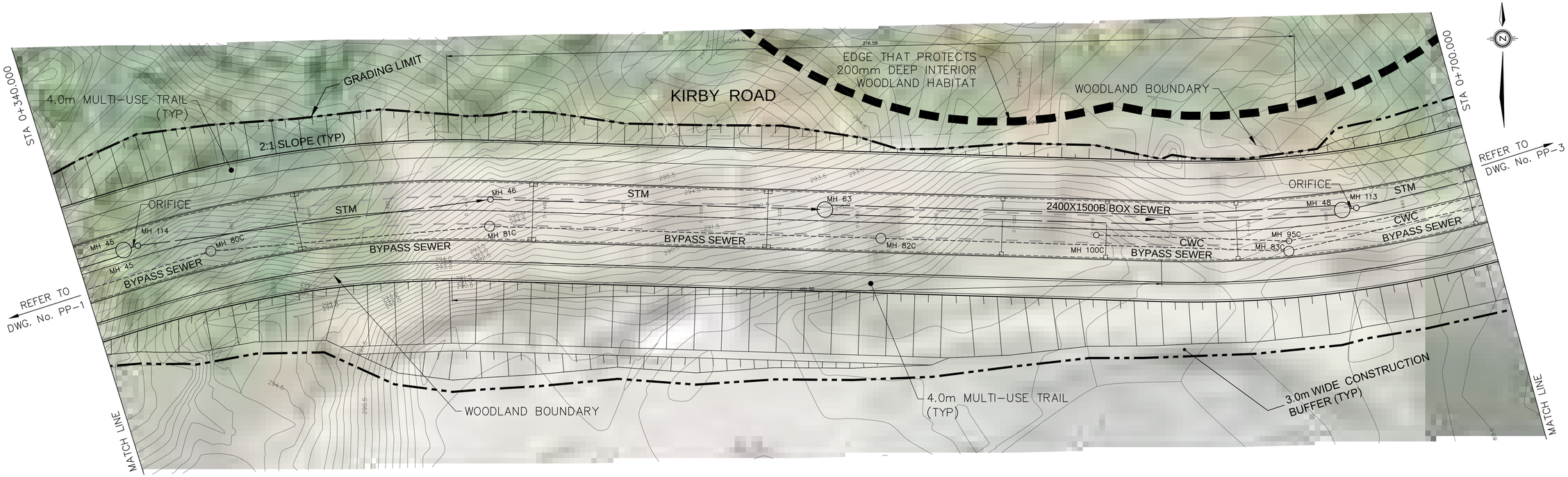
KIRBY ROAD EXTENSION MUNICIPAL CLASS ENVIRONMENTAL ASSESSMENT

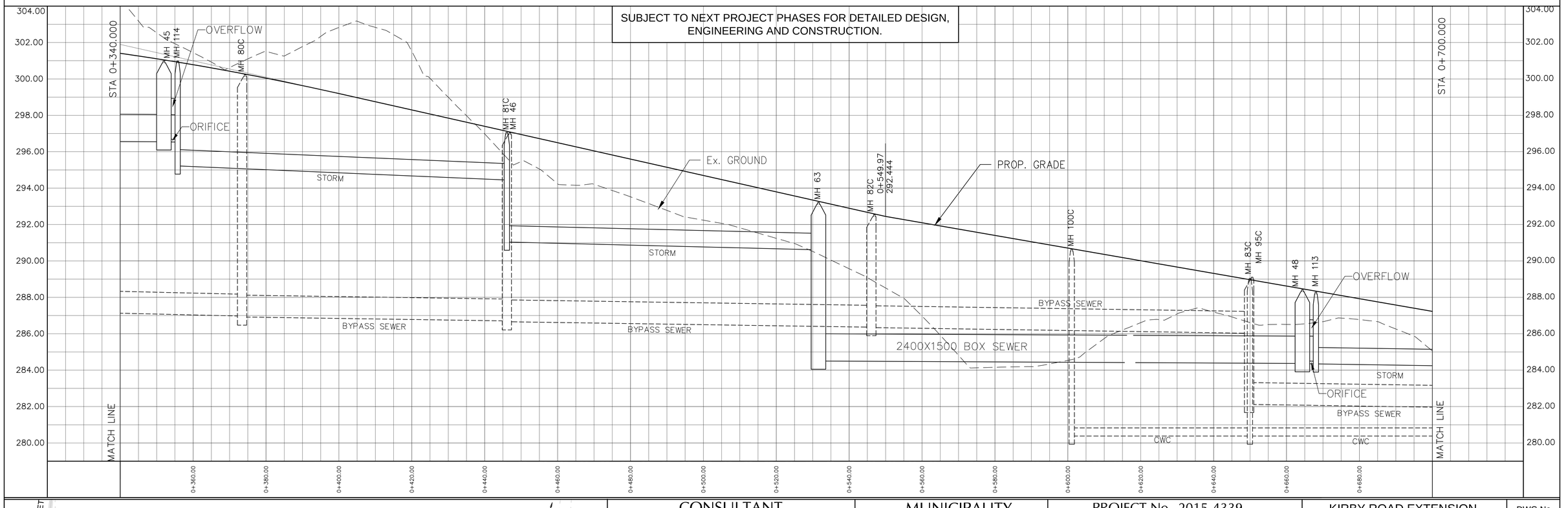
PLAN AND PROFILE

FROM STA.0+040.000 TO STA. 0+340.000

DWG.No PP- 1

DATE: 2019/08/28





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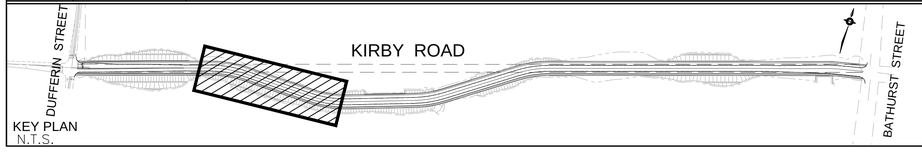

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MUNICIPALITY

VAUGHAN

PROJECT No. 2015-4339

SCALE:

HORIZONTAL 0 5 10 15 20 25 30 35 40 45 50m

VERTICAL 0 1 2 3 4 5 6 7 8 9 10m

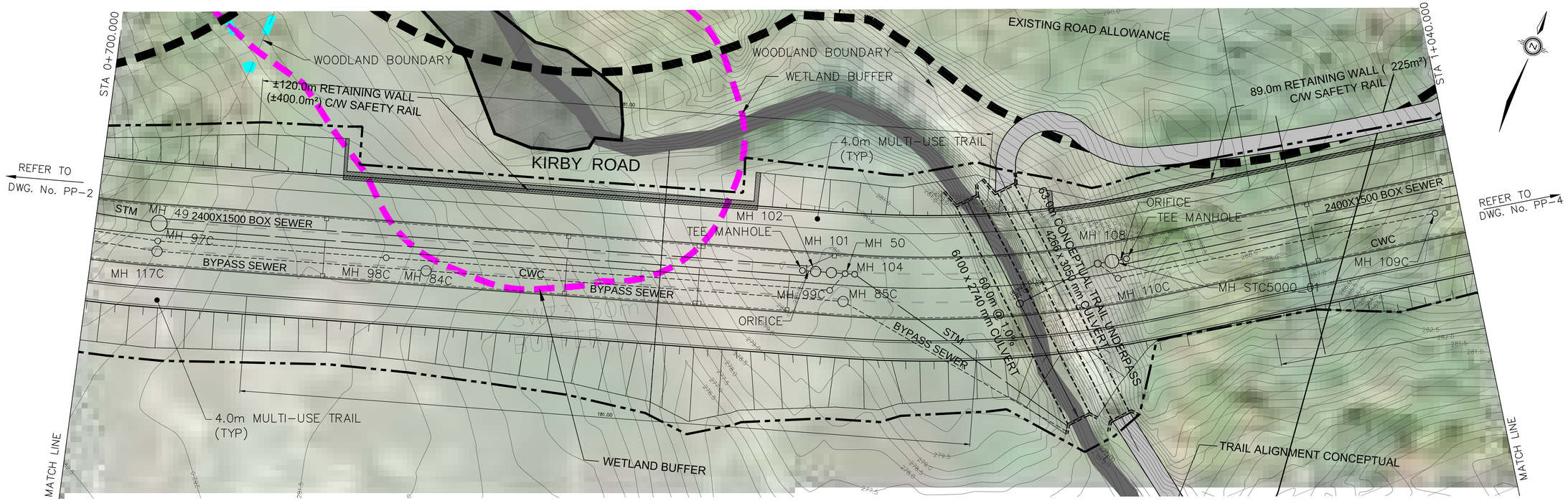
KIRBY ROAD EXTENSION
MUNICIPAL CLASS ENVIRONMENTAL ASSESSMENT

PLAN AND PROFILE

FROM STA. 0+340.000 TO STA. 0+700.000

DWG.No
PP- 2

DATE:
2019/08/28



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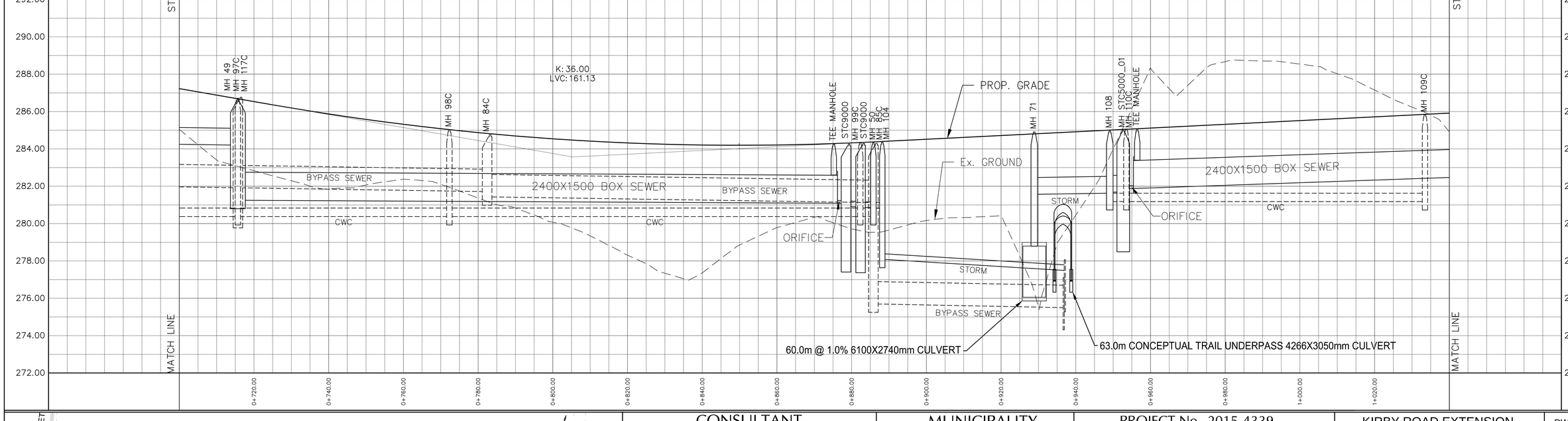

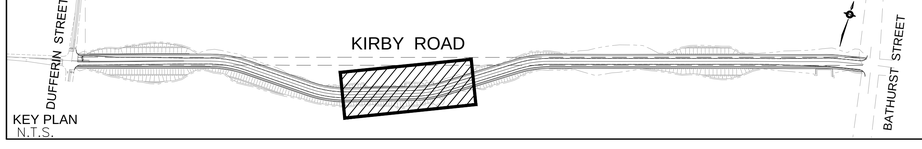

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MUNICIPALITY

VAUGHAN

PROJECT No. 2015-4339

SCALE:

HORIZONTAL 0 5 10 15 20 25 30 35 40 45 50m

VERTICAL 0 1 2 3 4 5 6 7 8 9 10m

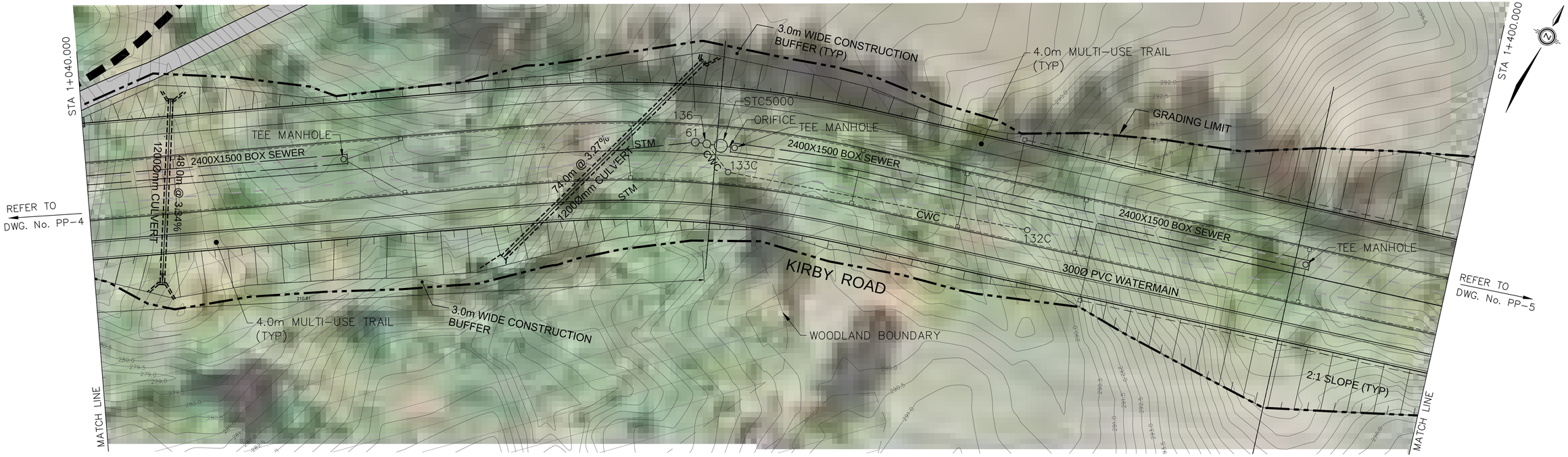
KIRBY ROAD EXTENSION MUNICIPAL CLASS ENVIRONMENTAL ASSESSMENT

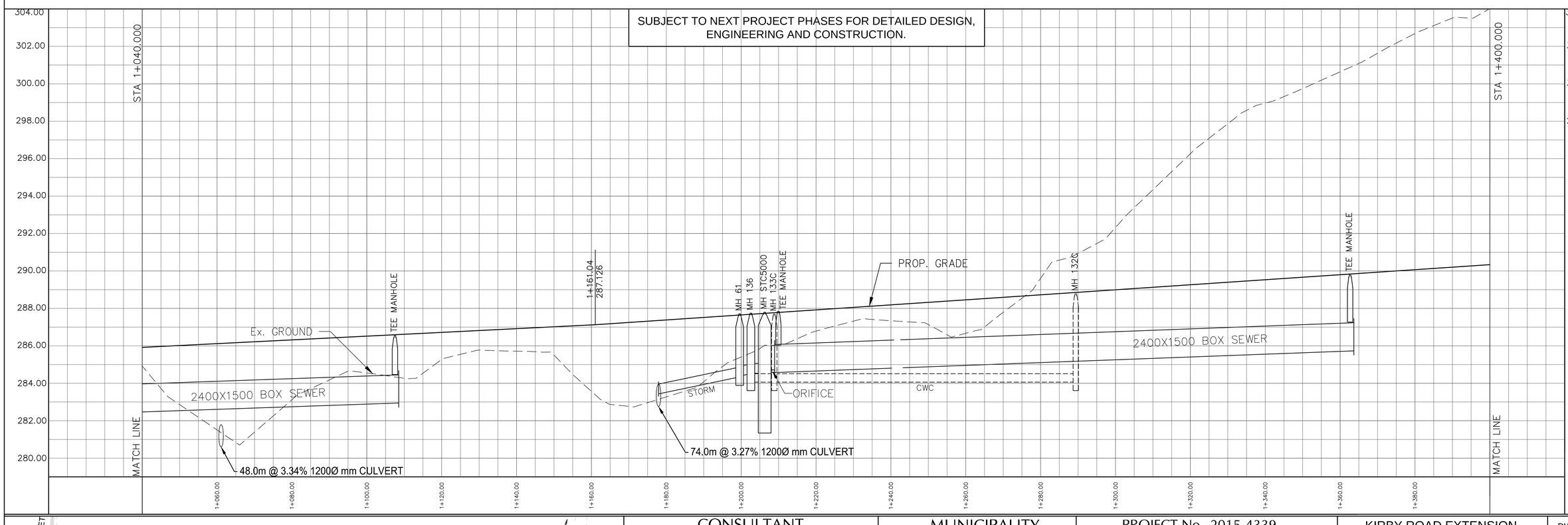
PLAN AND PROFILE

FROM STA. 0+700.000 TO STA. 1+040.000

DWG.No PP- 3

DATE: 2019/08/28





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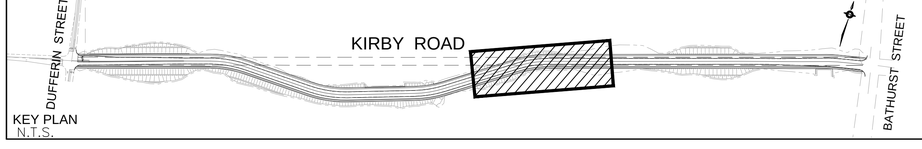

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MUNICIPALITY

VAUGHAN

PROJECT No. 2015-4339

SCALE:

HORIZONTAL 0 5 10 15 20 25 30 35 40 45 50m
VERTICAL 0 1 2 3 4 5 6 7 8 9 10m

KIRBY ROAD EXTENSION MUNICIPAL CLASS ENVIRONMENTAL ASSESSMENT

PLAN AND PROFILE

FROM STA. 1+040.000 TO STA. 1+400.000

DWG.No PP- 4

DATE: 2019/08/28

STA 1+400.000

MATCH LINE

STA 1+760.000

MATCH LINE

3.0m WIDE CONSTRUCTION BUFFER (TYP)

4.0m MULTI-USE TRAIL (TYP)

KIRBY ROAD

2.0m BENCH (TYP)

GRADING LIMIT

2:1 SLOPE (TYP)

REFER TO DWG. No. PP-4

REFER TO DWG. No. PP-6

MH 67

STM

MH 170

2400X1500 BOX SEWER

10.75

14.50

10.75

3500

MH 121C

CWC

97.0m CONCEPTUAL TRAIL UNDERPASS 4266 x 3050 mm CULVERT

3000 x 2400 mm CULVERT

92.5m @ 1.7%

STM MH 168 MH 167

MH 122C

ORIFICE

STC4000

CWC

MH 94

MH 130

300Ø PVC WATERMAIN

300Ø PVC WATERMAIN

300Ø PVC WATERMAIN

300Ø PVC WATERMAIN

STM

4.0m MULTI-USE TRAIL (TYP)

3.0m WIDE CONSTRUCTION BUFFER (TYP)

2.0m BENCH (TYP)

SUBJECT TO NEXT PROJECT PHASES FOR DETAILED DESIGN, ENGINEERING AND CONSTRUCTION.

304.00
302.00
300.00
298.00
296.00
294.00
292.00
290.00
288.00
286.00
284.00
282.00
280.00

Ex. GROUND

PROP. GRADE

MH 67

TEE MANHOLE

MH 121C

MH 122C

MH 94

STC4000

MH 168

MH 167

STORM

STORM

2400X1500 BOX SEWER

CWC

97.0m CONCEPTUAL TRAIL UNDERPASS 4266X3050 mm CULVERT

92.5m @ 1.77% 3000x3400 mm CULVERT

1+420.00 1+440.00 1+460.00 1+480.00 1+500.00 1+520.00 1+540.00 1+560.00 1+580.00 1+600.00 1+620.00 1+640.00 1+660.00 1+680.00 1+700.00 1+720.00 1+740.00

DUFFERIN STREET

KIRBY ROAD

BATHURST STREET

KEY PLAN
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PROJECT No. 2015-4339

SCALE:

HORIZONTAL 0 5 10 15 20 25 30 35 40 45 50m

VERTICAL 0 1 2 3 4 5 6 7 8 9 10m

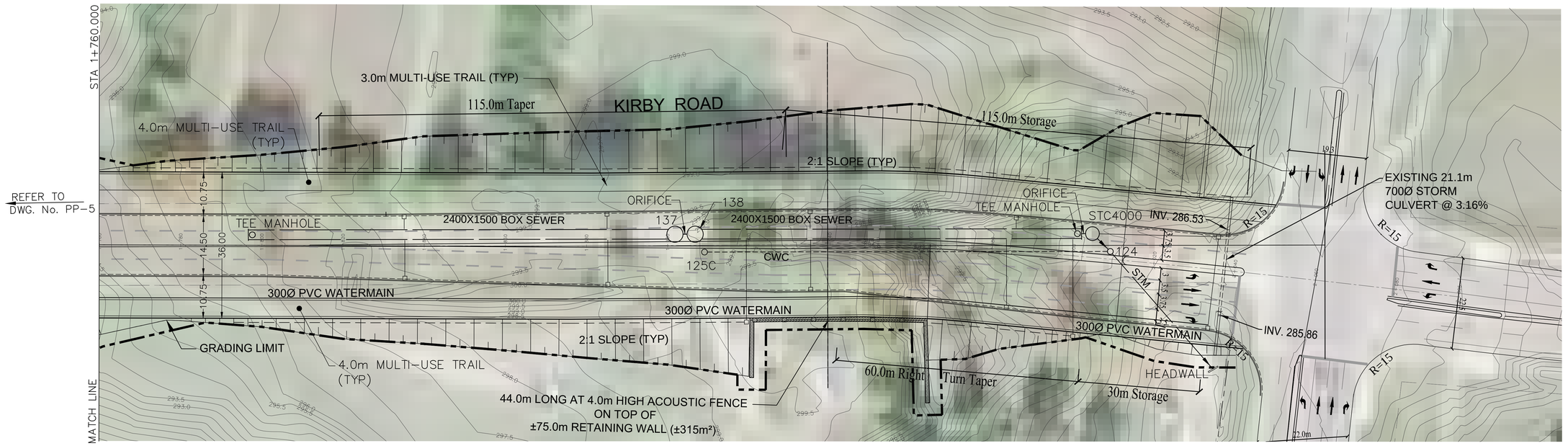
KIRBY ROAD EXTENSION MUNICIPAL CLASS ENVIRONMENTAL ASSESSMENT

PLAN AND PROFILE

FROM STA. 1+400.000 TO STA. 1+760.000

DWG.No PP- 5

DATE: 2019/08/28



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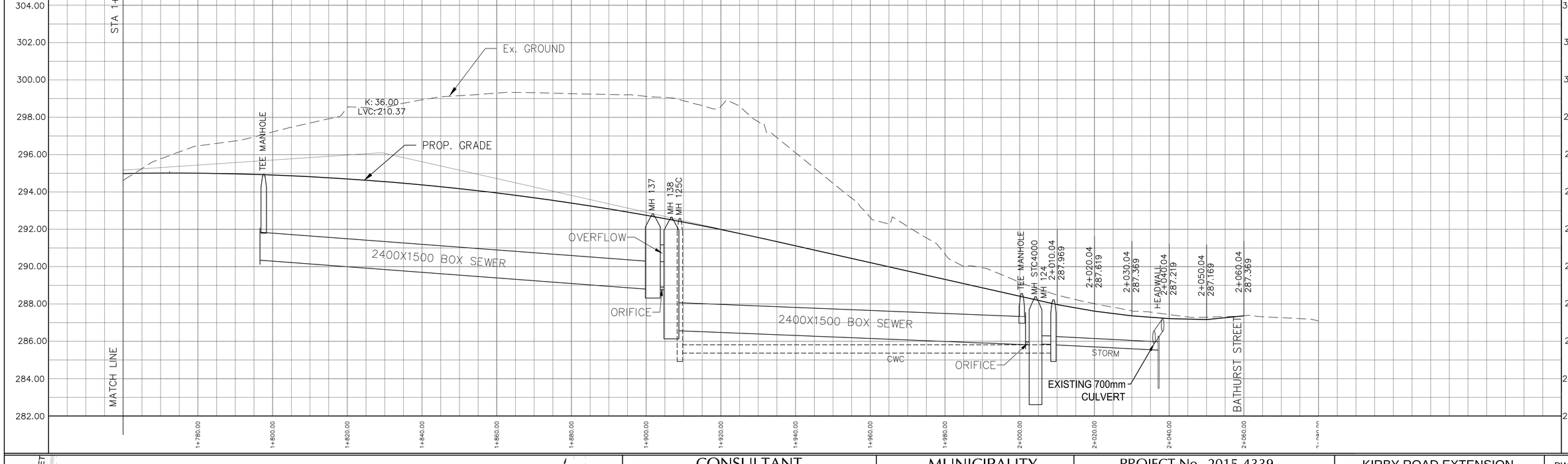

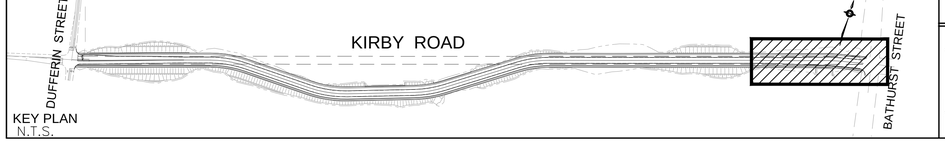

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PROJECT No. 2015-4339

SCALE:

HORIZONTAL 0 5 10 15 20 25 30 35 40 45 50m
VERTICAL 0 1 2 3 4 5 6 7 8 9 10m

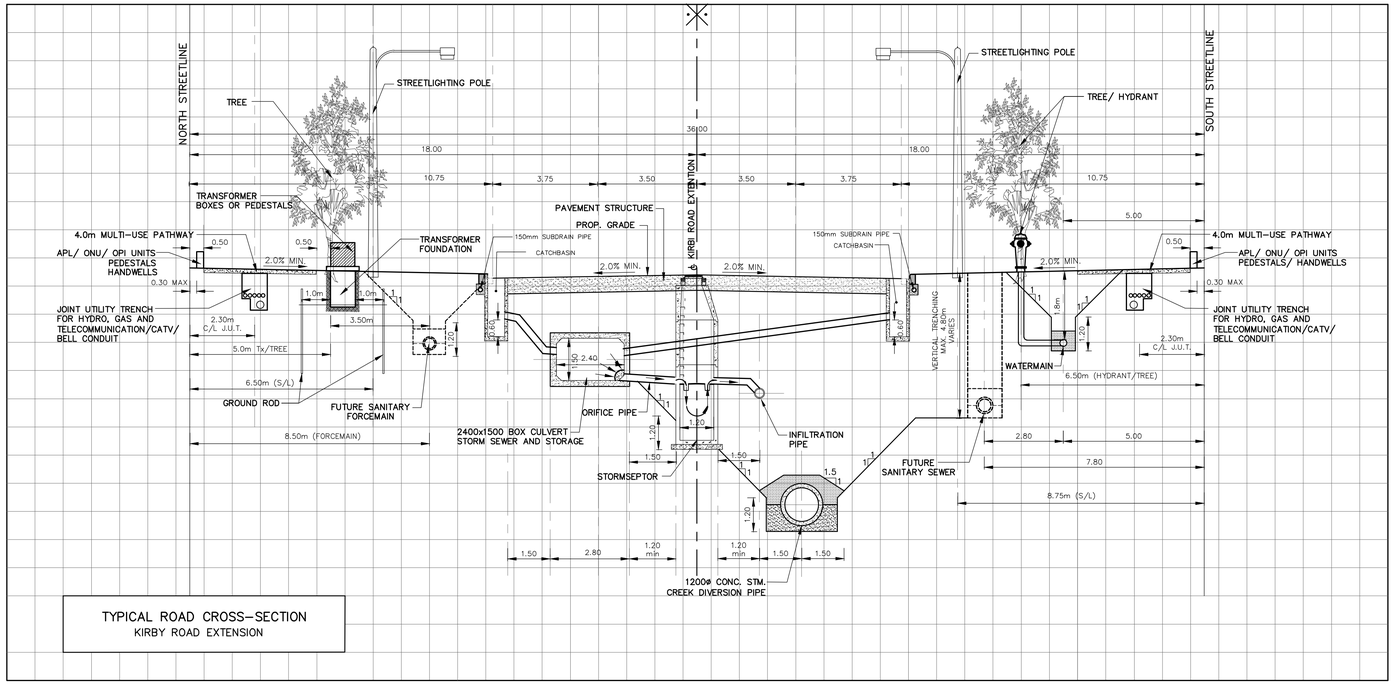
KIRBY ROAD EXTENSION MUNICIPAL CLASS ENVIRONMENTAL ASSESSMENT

PLAN AND PROFILE

FROM STA. 1+760.000 TO STA. 2+060.000

DWG.No
PP- 6

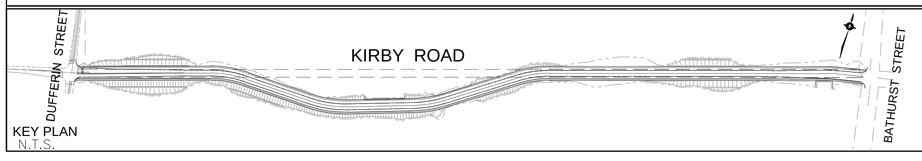
DATE:
2019/08/28



TYPICAL ROAD CROSS-SECTION
KIRBY ROAD EXTENSION

SCALE 1:100

SUBJECT TO NEXT PROJECT PHASES FOR DETAILED DESIGN, ENGINEERING AND CONSTRUCTION.



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MUNICIPALITY
VAUGHAN

PROJECT No. 2015-4339

SCALE: AS SHOWN

KIRBY ROAD EXTENSION
MUNICIPAL CLASS ENVIRONMENTAL ASSESSMENT

TYPICAL ROAD CROSS-SECTION

DWG.No SEC-1

DATE: 2019/08/28

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